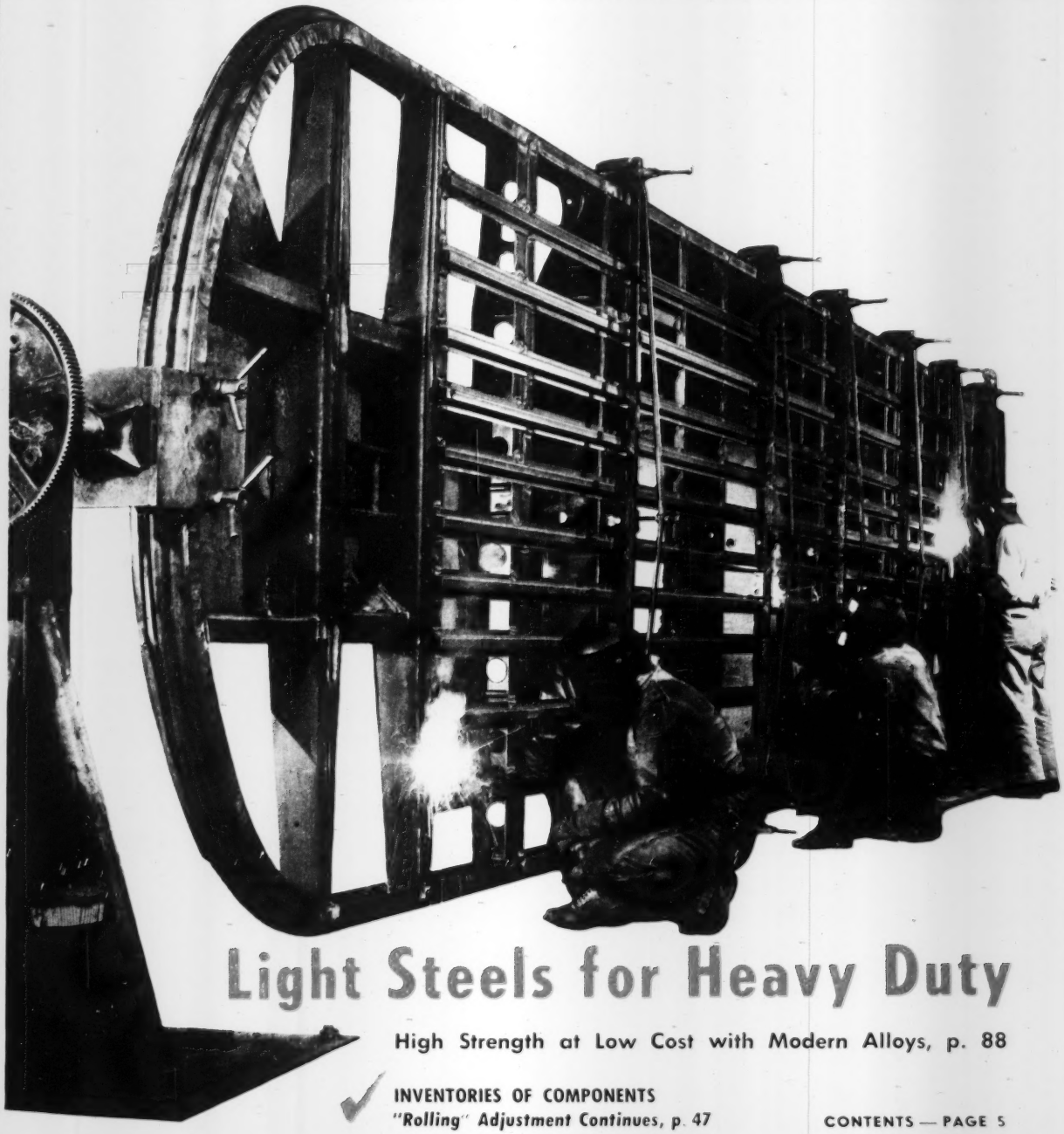
OCTOBER 5, 1953

STEEL

THE WEEKLY MAGAZINE OF METALWORKING



Light Steels for Heavy Duty

High Strength at Low Cost with Modern Alloys, p. 88

✓ INVENTORIES OF COMPONENTS

"Rolling" Adjustment Continues, p. 47

CONTENTS — PAGE 5

OVERHOISTING FEAR

This Limit Stop not only *disconnects* the motor from the line, but *stops* the motor quickly. On D-c cranes, where high hoisting speeds prevail, dynamic braking aids in bringing the hook block to rest.

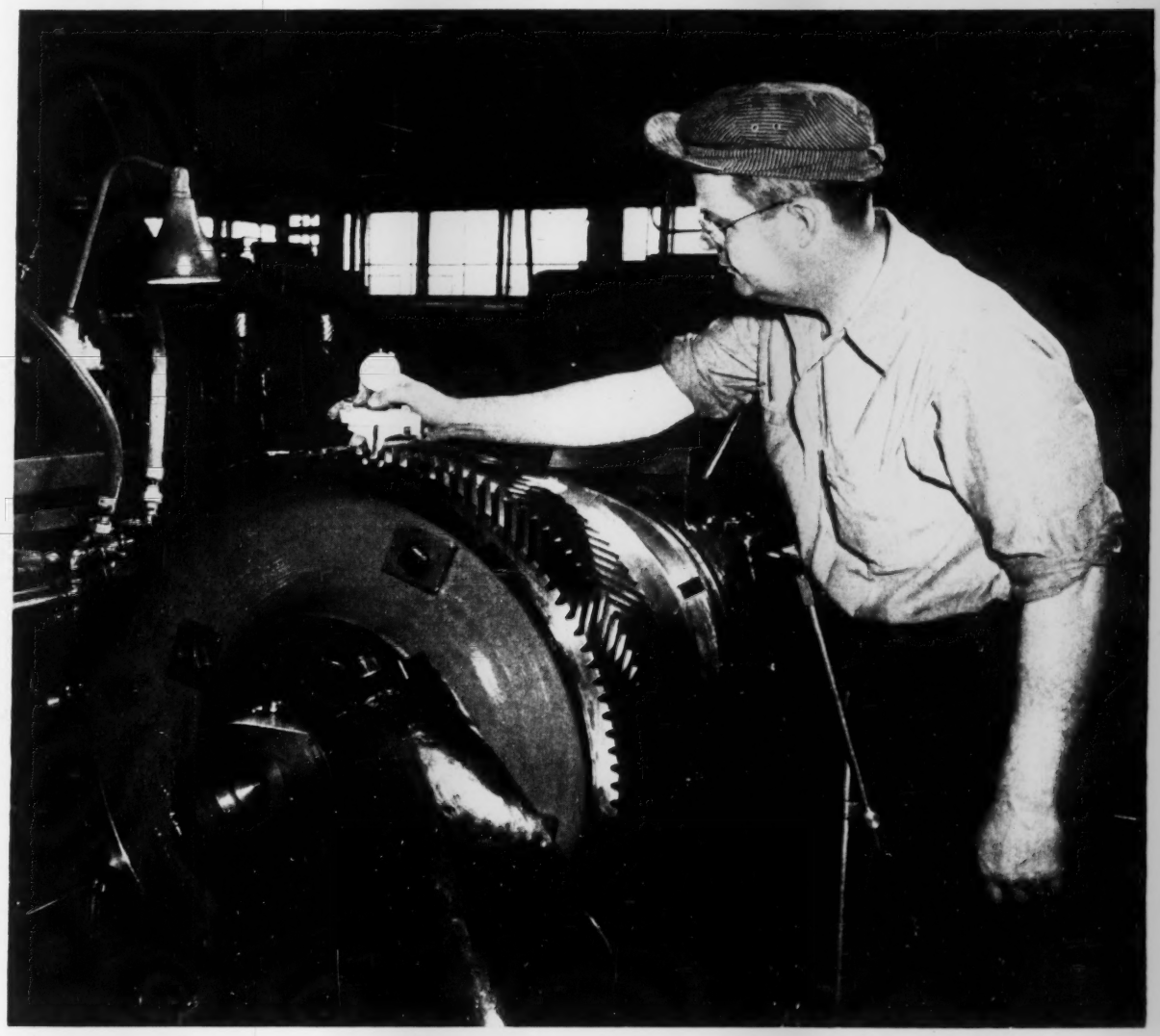
Since this Limit Stop is operated directly by the hook block, stretching of the hoisting cables does not affect the tripping point. By removing the fear of an overhoisting accident, the YOUNGSTOWN Limit Stop enables the crane operator to do better work.

*A crane *without* a Youngstown is as risky as a boiler *without* a safety valve.

Easily applied to both new and existing A-c and D-c Cranes.

WRITE FOR BULLETIN 1032

E&M



Customers Tell Us Why They Like These Gear Blanks

Not long ago, we decided to investigate customer opinions of Bethlehem forged-and-rolled gear blanks. We asked some pretty direct questions, two of them being "Why do you specify Bethlehem gear blanks? What advantages have you found in these products?"

Here are a few of the answers:

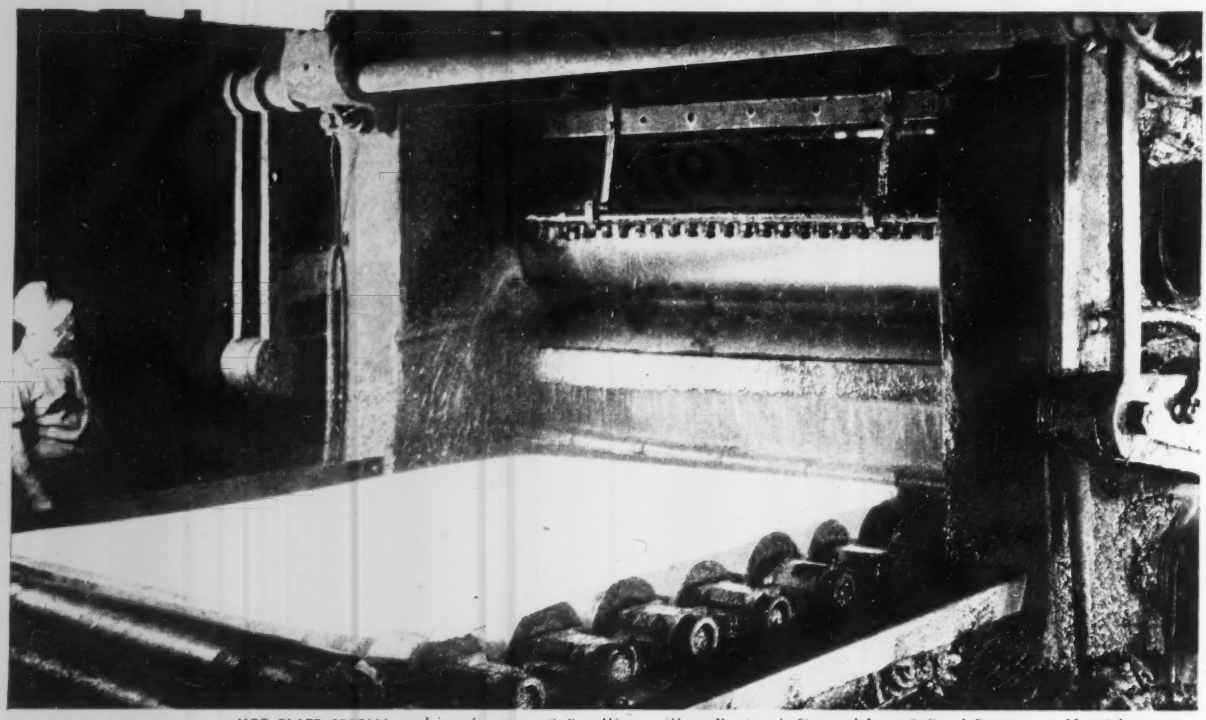
- "Ease of machining and uniform finish allowance on OD, bore, and faces."
- "The solid, clean metal in the forged blanks is particularly appreciated in tooth-cutting operations on herringbone gear generators, gear shapers, or hobbing machines."
- "Fewer finishing cuts are required, and the cutting speed is usually higher."
- "There is almost never a rejection after cutting gear teeth."
- "The uniform finish allowance all over permits fast, uniform chucking or mounting in the machine."
- "The blanks are stronger, sounder, better able to withstand shocks."

The chances are, you would find Bethlehem forged-and-rolled blanks equally advantageous in meeting your own requirements. They are available in sizes from 10 to 42 in. OD, heat-treated or untreated, and are strongly recommended for spur, bevel, miter, and herringbone gears. Why not investigate? We feel that your own experience with these blanks will bear out fully what other users say about them.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL



HOT PLATE SPECIAL rushing from an 89" rolling mill at Barium's Central Iron & Steel Company, Harrisburg, Pa.

Here comes next year's luxury liner

Or a giant oil storage tank *or* a freight car *or* a bridge for a super highway.

Wherever it goes, however, high-quality steel plate from Barium's 100-year-old Central Iron & Steel Company rates a warm welcome. And it goes nearly everywhere in basic industry—petroleum, transportation, shipping and construction.

Plate steel is only one of a long list of Barium steel products. In fact, few other steel companies make so many different things. And when you deal with Barium, you draw on a 16-company reservoir of engineering knowledge and production experience hard to match even in much larger companies.

Maybe that's why so many essential products you see today—from tiny instrument springs to 20,000-barrel tanker barges—wear Barium nameplates. We'll be glad to tell you what's behind this name. Write Barium Steel Corporation, 25 Broad St., New York 4, New York.

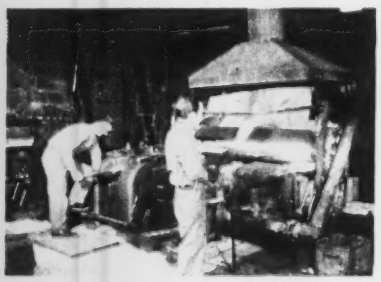
BARIUM STEEL CORPORATION

Sixteen integrated companies working in STEEL • MAGNESIUM • ALUMINUM • FIBERGLAS

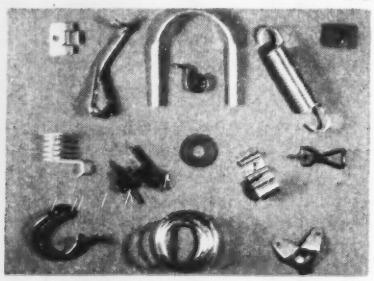
BAYONNE BOLT CORP. • CENTRAL IRON AND STEEL COMPANY • CHESTER BLAST FURNACE, INC. • CLYDE IRON WORKS, INC. • CUYAHOGA SPRING COMPANY • EAST COAST AERONAUTICS, INC. • ERIE BOLT AND NUT COMPANY • GEOMETRIC STAMPING CO. • GLOBE FORGE INCORPORATED • INDUSTRIAL FORGE & STEEL, INC. • JACOBS AIRCRAFT ENGINE CO. • KERMATH MANUFACTURING CO. • KERMATH LIMITED (CANADA) • PHOENIX BRIDGE CO. • PHOENIX IRON & STEEL CO. WILEY MANUFACTURING CO.

3.3

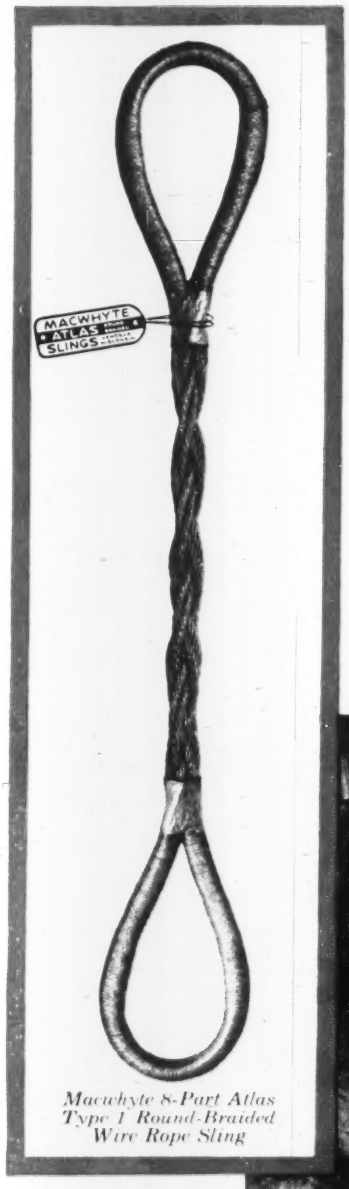
HAMMERING HOME its point is this drop forge at Barium's Globe Forge, Inc., Syracuse, N. Y. Globe forges a wide range of products, from automotive gear blanks to rocket components and tank parts, specializes in intricate customer-specified jobs.



BIG BOLTS are these 2 in. diameter steel heavyweights being forged on an Acme machine at Barium's Bayonne Bolt Corp., Bayonne, N. J. Bayonne makes standard and special fasteners from 1/4 in. to 4 in. in diameter.



GROUP PORTRAIT showing a few of the almost endless variety of extension, compression and torsion springs, wire forms and flat springs made by Barium's Cuyahoga Spring Co., Cleveland, O. At middle right is famous Snap-Clip.



Macwhyte 8-Part Atlas Type 1 Round-Braided Wire Rope Sling

GREATER SLING FLEXIBILITY THROUGH

BALANCED BRAIDING

Macwhyte's Atlas Braided Slings

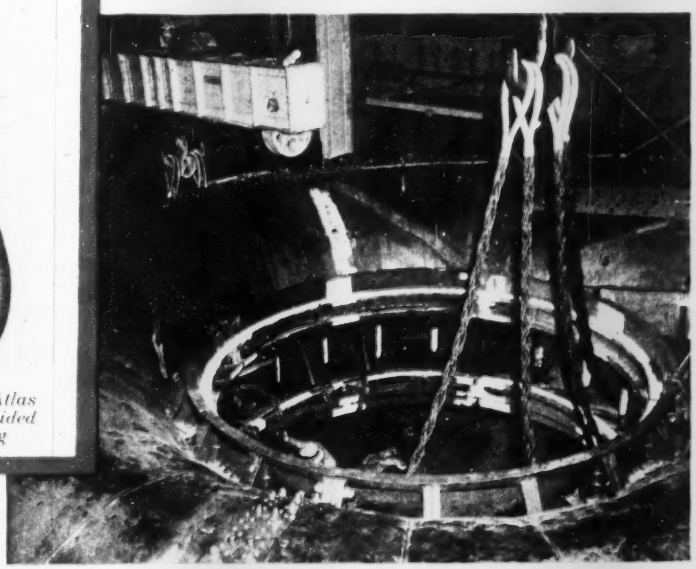
Atlas Braided Slings have far greater flexibility because of Macwhyte's *balanced* method of construction:
1) Ropes are spliced endless before braiding.
2) Right lay ropes balance left lay ropes.
3) All ropes follow uniform spiral paths, assuring balanced tension throughout the sling body.

Macwhyte's "Balanced Braid" permits fuller, safer gripping . . . no kinking . . . no spinning . . . faster materials handling.

Complete line of slings for every need

Three body types are available: Atlas Round-Braided, Drew Flat-Braided, Monarch Single-Part. All are made to order in any size for any job.

Our sling engineers will be glad to study your sling needs and make recommendations promptly.



115 Ton Casing Assembly Handled with Macwhyte Atlas Type 1, Round-Braided Wire Rope Slings.

Photo courtesy Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

MACWHYTE SLINGS

Ask for New Circular No. 5308

Lists strengths and safe-loads for ATLAS Round-Braided, DREW Flat-Braided, and MONARCH Single-Part Slings.

For cranes and hoists specify PREformed Monarch Whyte Strand Crane Rope made by Macwhyte. Ask for Folder 50-25.

MACWHYTE COMPANY
KENOSHA, WIS.

MACWHYTE COMPANY
2912 Fourteenth Ave., Kenosha, Wisconsin

Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cable, Safe-Lock Assemblies, Monel Metal and Stainless Steel Wire Rope.

Mill depots: New York • Pittsburgh • Chicago • St. Paul • Fort Worth • Portland • Seattle • San Francisco • Los Angeles • Distributors throughout U.S.A.

Here's how to plot a plane's Angle-of-Climb...

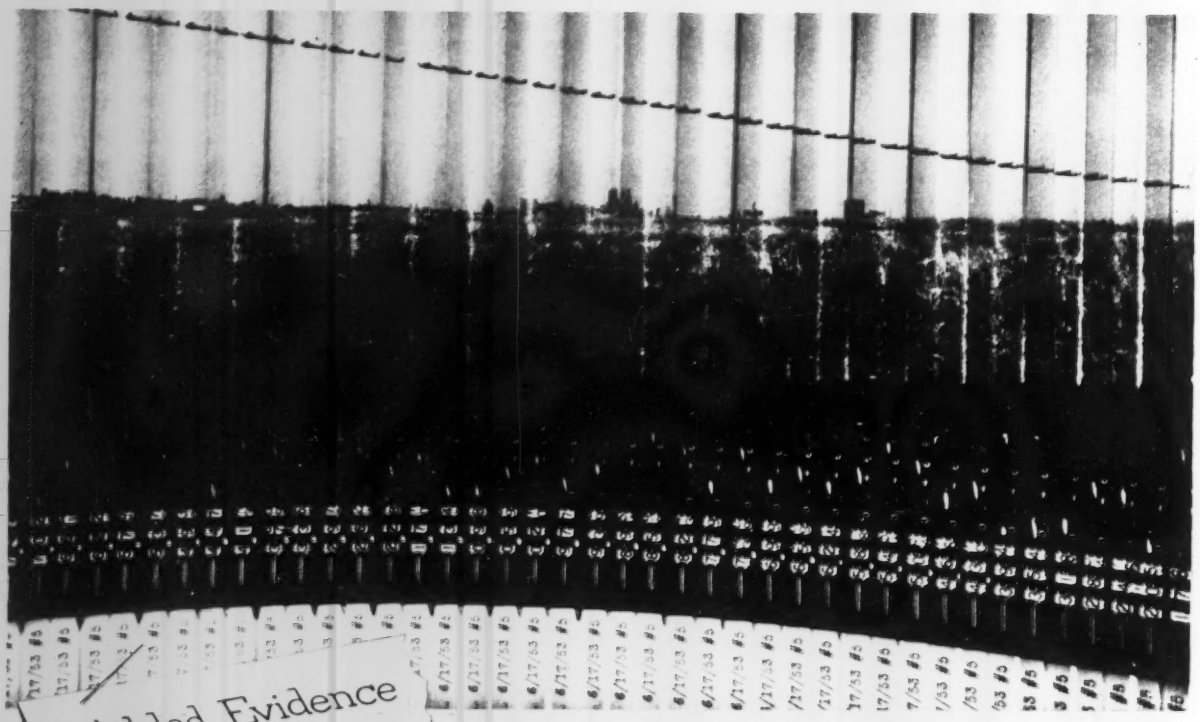


Photo by Sherman Fairchild & Associates' Flight Analyzer Camera, New York City

Added Evidence that—

Everyone Can Count on VEEDER-ROOT

New take-off technique yields an 8° climb, as this progressive *single photo* shows. And this is 100% improvement over old techniques . . . increasing safety and decreasing noise-annoyance at city airports.

Here you actually see 53 separate exposures. And each, reading from bottom up, shows the date and number of the flight photographed. Next above is a device which records the time ...exact to 1/1,000th of a second. And in the heart of this device is a Veeder-Root Counter.

So here again you see one of the heretofore uncounted ways in which "Everyone Can Count on Veeder-Root". What's *your* problem? Let us put our mathematical eyes on it. Write:

VEEDER-ROOT INCORPORATED
HARTFORD 2, CONNECTICUT

Chicago 6, Ill. • New York 19, N. Y. • Greenville, S. C.
Montreal 2, Canada • Dundee, Scotland
Offices and Agents in Principal Cities

"The Name that Counts"

This Week in Metalworking

STEEL

Vol. 133 No. 14 October 5, 1953

✓NEWS ✓PRODUCTION-ENGINEERING ✓MARKETS

Metalworking Outlook 39
What's ahead for metalworking? The editors explore various aspects of business to help you plan for the future

As the Editor Views the News 43

Windows of Washington 54

Mirrors of Motordom 61

The Business Trend 65

Men of Industry 69
Important events in the lives of the men who make metalworking news

Technical Outlook 87

Light Steel Adds Service Pounds 88
High-strength, low-alloy steels pioneer way for design of lighter sections with increased payloads

Getting More For Your Steel Dollar 90
Although high-strength steel costs more, it is 50 per cent stronger than structural carbon steel

Progress in Steelmaking 98
Machine scarfing and oxygen, hot-cut-off machines are two advances in oxygen cutting development

Two Big Broaches Do Job of Many 106
Broaching surfaces of cast iron crankcases for V-8 engines calls for cutting in both directions

New Products and Equipment 115

Heat Treat Line Tells Handling Story 134
Even though it is 110 feet long, automatic line can handle threaded fasteners with jeweler's precision

The Market Outlook 141
Metal Prices and Composites begin on Page 142

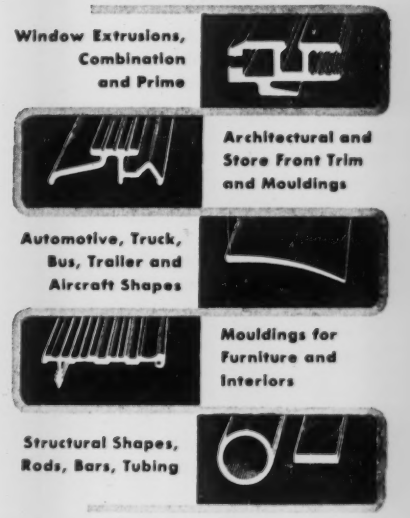
Nonferrous Metals 144

Behind the Scenes	6	Obituaries	75
Letters to the Editors	10	Helpful Literature	121
Foreign News	57	Calendar of Meetings	136

Editorial, Business Staffs 16. Advertising Index 176. Editorial Index available semiannually. STEEL also is indexed by Engineering Index Inc., 29 West 39th St., New York 18

Published every Monday by the Penton Publishing Company, Penton Building, Cleveland 13, Ohio. Subscription in the United States and possessions, Canada, Mexico, Cuba, Central and South America, one year $7.50; two years $15; all other countries, one year $20. Single copies (current issues) 50 cents. Metalworking Yearbook issue $2.00. Entered as second class matter at the postoffice in Cleveland, under the Act of March 3, 1879. Copyright 1953 by Penton Publishing Co.

PE ALUMINUM EXTRUSIONS
designed and produced to fit your needs


Window Extrusions, Combination and Prime
Architectural and Store Front Trim and Mouldings
Automotive, Truck, Bus, Trailer and Aircraft Shapes
Mouldings for Furniture and Interiors
Structural Shapes, Rods, Bars, Tubing

If your production requirements call for a specially-designed aluminum extrusion, the skill and experience of PE design engineers and production men are available to you to help answer your specific needs. Or, it may be that a solution to your requirements can be found among the 4000 standard rods, bars, shapes, and tubing currently cataloged by Precision Extrusions and available without additional die service charge.

PE **PERSONALIZED SERVICE** and specialization in aluminum extruding assures you of prompt handling of your inquiry, careful production supervision, and extrusion quality meeting the highest standards of the industry.

PE **COMPLETE FACILITIES** include design engineering, die making, billet casting, extrusion production, and standard finishing operations.

PE **ENGINEERING ASSISTANCE** is available without obligation. If your present or future plans call for quality aluminum extrusions in standard or special shapes, call on PE, or *write, on your company letterhead, for our new complete catalog.*

QUALITY • SERVICE
PE
PRECISION EXTRUSIONS
BENSENVILLE, ILLINOIS
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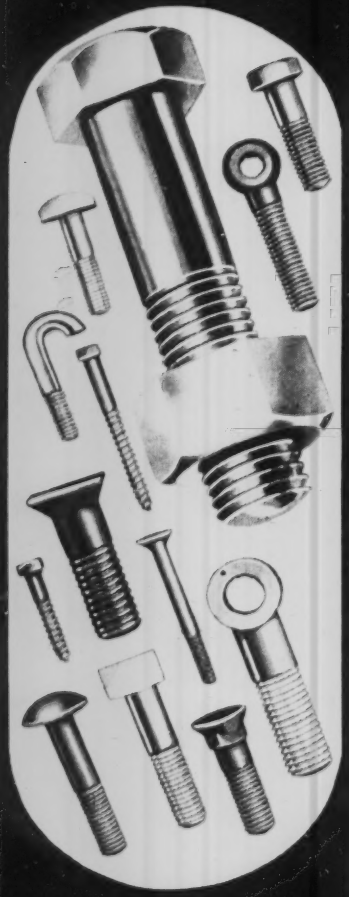
UNIFORM CLASS 3 FIT

BOLTS·NUTS
STUDS

- Carbon Steel
- Alloy Steels
- Stainless Steel
- Silicon Bronze
- Naval Brass
- Monel Metal



You can depend on a uniform Class 3 fit when you buy Pawtucket threaded fasteners. Standard items or specialties — all Pawtucket products are accurately made in standard dimensions or to your specifications. Heat treating with precision-controlled modern equipment.

BETTER BOLTS SINCE 1882

PAWTUCKET

"THE BOLT MAN"

MANUFACTURING COMPANY

327 Pine Street · Pawtucket, R. I.

THE PLACE TO SOLVE YOUR BOLT PROBLEMS

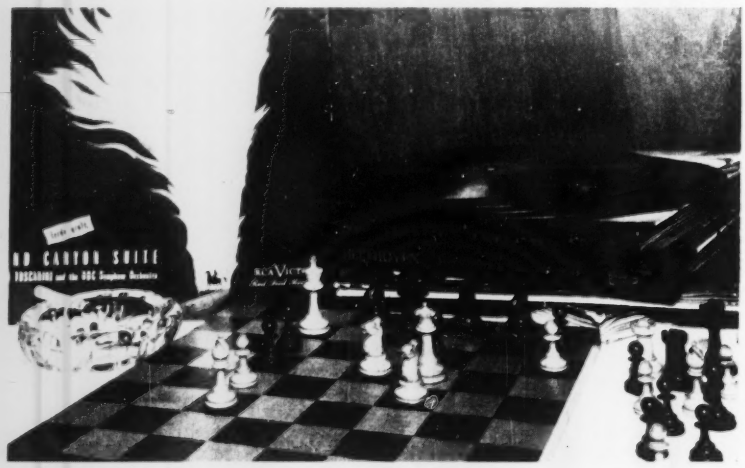
T.M. REG.

behind the scenes

From the Fervent Four

Our Sagacious Six, known affectionately around here as the Saggy Six, threw down the gauntlet and the Fervent Four from the Reed Roller Bearing Bit Company of Houston, Texas hurled it right back. The result is the interesting chess problem you see laid out in the picture below.

The Saggy Six tell us they have the solution . . . they think. Before we announce it, we want to give you a try at puzzling it out. Louise Magnes, representing the Fervent Four, offers these clues: "White to move and mate in two." The answer to the problem is somewhere in the picture.



Busy Man

One of our roving editors called on a man the other day, and that worthy greeted him wearing undershorts. The fellow was not crazy, just getting measured for a new suit by his tailor.

Charter Members

The first six new members of our new organization, Let's Do Away with Letter Writing Conventions of America Inc., are Gerald L. Lykken of Lain Drafting College, Miss Charlsie Burch of General Steel Castings Corp., B. VerNooy of T. D. Williamson Inc., Robert P. Jeffer of Charles F. Guyon Inc., Donald F. Stoneburner of National Cash Register Co. and W. E. Bodmer of Cincinnati Cleaning & Finishing Machinery Co.

They all qualified in fine style by writing us a sensible epistle minus the superfluous "Dear Shrdlu" and "Yours truly" or other conventional closing. All you need do to join LDAWLWCA is write us a letter without those conventions, and we'll add you to our rolls. As Mr. Lykken points out, "It's the best thing since the five-cent cigar."

Puzzle & Poetry Corner

LDAWLWCAers also all came through with correct answers to the Sept. 21 puzzle. The answer is revealed in this jingle by Mr. Bodmer:

Heracles was soon to learn
In an answer brief and sporty,
Augeas smiled and said to him:
"My herds are now two forty."

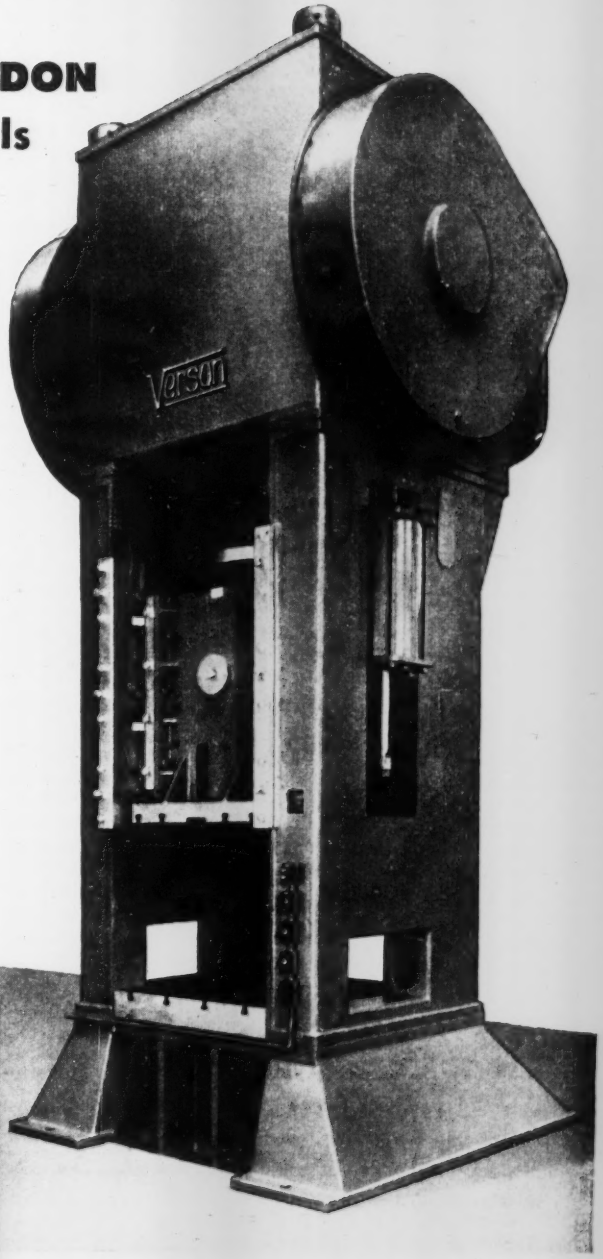
Incidentally, here is the correct answer to the September 14 problem. The diameter of the lake is 1.114 miles.

Shrdlu

(Metalworking Outlook—Page 39)

Here's How WYMAN-GORDON trims jet engine turbine wheels with a 600 ton Verson CRANK TYPE PRESS

At Wyman-Gordon Company, as in many plants engaged in the production of the implements of defense, modern Verson presses are helping to speed production and cut costs. Take the job illustrated below—forged jet engine turbine wheels are trimmed neatly and quickly in a single stroke of a 600 ton Verson crank type press. Routine, yes, but it is the sum of such production techniques as this that enable our plants to meet the demands of a part war—part peacetime economy.



Illustrated above is the 600 ton Verson single crank, single action, double gear twin drive press. Bolster area, F.B. x R.L., is 56" x 48". At left the piece being removed from the press after trimming.

A Verson Press for every job from 60 tons up.

Verson

ORIGINATORS AND PIONEERS OF ALLSTEEL STAMPING PRESS CONSTRUCTION

ALLSTEEL PRESS COMPANY

2118 S. KENWOOD AVENUE, CHICAGO 12, ILLINOIS • 50 LAMAR AT LEDBETTER DRIVE, DALLAS, TEXAS

MECHANICAL AND HYDRAULIC PRESSES AND PRESS BRAKES • TRANSMAT PRESSES • TOOLING • DIE CUSHIONS • WHEELON DIRECT ACTING HYDRAULIC PRESSES

Need Help on Difficult Threading Jobs?

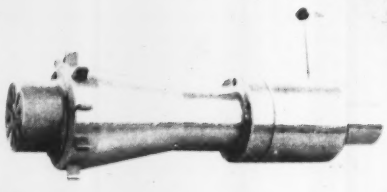
50th ANNIVERSARY

LANDIS ENGINEERS DEVISE SPECIAL EQUIPMENT & METHODS FOR "HARD-TO-THREAD" WORKPIECES

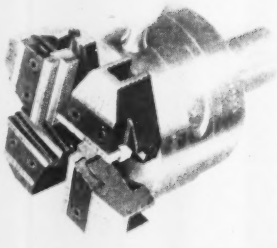
Don't let the production of an unusual thread hinder an otherwise efficient manufacturing process. Hundreds of companies are today, with *LANDIS* equipment, profitably generating threads formerly considered impossible or too costly for practical operation.

We offer to all manufacturers aid in solving problems in all phases of thread production. We will consult on the original design to insure that the proper thread to best serve a particular function is employed; we will advise as to the best standard equipment to produce a specific thread; we will develop special tooling for the production of an unusual or difficult thread; we will design special holding fixtures for threading workpieces that are difficult to chuck; or we will work out special methods to best fit multiple threading operations into the complete production process.

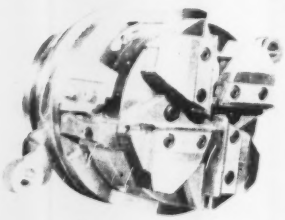
The illustrations show three examples of such Threading Problems solved by our Engineering Department. No matter what your Threading Problem—let our years of Thread Experience and Engineering Know-How work with you in its solution. Write or call *LANDIS* today.



A special Collapsible Tap used to thread 12" to 18" valve bodies for seat ring insertions. LANDIS Valve Seat Taps are individually engineered for their particular usage and are supplied to tap valve bodies from the 2" to the 24" size.



Double Diameter Chasers used to generate threads on reducing bushings and similar workpieces. These chasers cut threads on two different diameters simultaneously, thus, eliminating a second operation. Pitch and thread form for the two diameters must be identical and other limitations necessitate individually designed chasers for threading parts of different dimensions.



A LANCO Taper Cutting Head designed for producing tapered threads up to 2¼" in length and to unusually close tolerances. The die head can be converted to cut a reverse taper by the simple application of a reverse tapes cam. Diameters from ½" to 4" and tapers ranging from zero to 2" per foot can be cut with this LANDIS Head.

LANDIS *Machine* CO.

WAYNESBORO · PENNSYLVANIA · U.S.A.

THE WORLD'S LARGEST EXCLUSIVE MANUFACTURERS OF THREAD GENERATING EQUIPMENT

METALS MARKET PLACE OF THE WORLD
NATIONAL METAL EXPOSITION
NATIONAL METAL CONGRESS

Royal Welcome

For America's most honored *Guests*

At no other place and at no other time in 1953 will the power and vitality and productive genius of the vast and basic metals industries of America be so forcefully and so clearly demonstrated as in Cleveland's Public Hall this October.

Here . . . in bold, animated, live-action display will be the newest . . . the finest . . . the most wanted developments . . . and here, too, will be the alert, the wise, the idea-seeking men who make the metals industries go forward.

NATIONAL METALS EXPOSITION AND CONGRESS
Cleveland Ohio Oct. 19-23

At this very moment,
hovering over your plant,
fire is ready to swoop down on
storage spaces, electrical generating
equipment, record vaults.
But like a bird of prey, it
casts a warning shadow... IF
you have a KIDDE Industrial
Smoke Detector.

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LETTERS
TO THE EDITORS

One-Piece Cold Extruded Rocket

We read with interest the "Letter to the Editor" (Aug. 31, p. 12) in regard to your article on cold extrusion "Cold Extrusion of Steel . . . A Military Hero in Civilian Garb" (July 27, p. 78). In particular, we were interested in your statement that the rocket used to illustrate the article on p. 82 was a two-piece rocket, with only the nose cold extruded.

Just for the record, here is a picture of a one-piece rocket produced by cold extrusion, or more accurately, by the Mullins Koldflo process. The gentleman holding the rocket is Ben Kaul, Mullins' director of technical development, who has "fathered" the Koldfo method of moving steel in its cold state. This rocket could be mass produced.

H. C. Wolf
assistant to the president
Mullins Mfg. Corp.
Salem, O.

Out West with Sales Reps

I enjoyed reading your article "Sales Reps: Increased Activity Ahead" (Aug. 3, p. 56). We are sales reps for a group of leading manufacturers in the Los Angeles area, so naturally this article is very beneficial to us.

I would like to get 25 or 30 tearsheets to distribute to my salesmen.

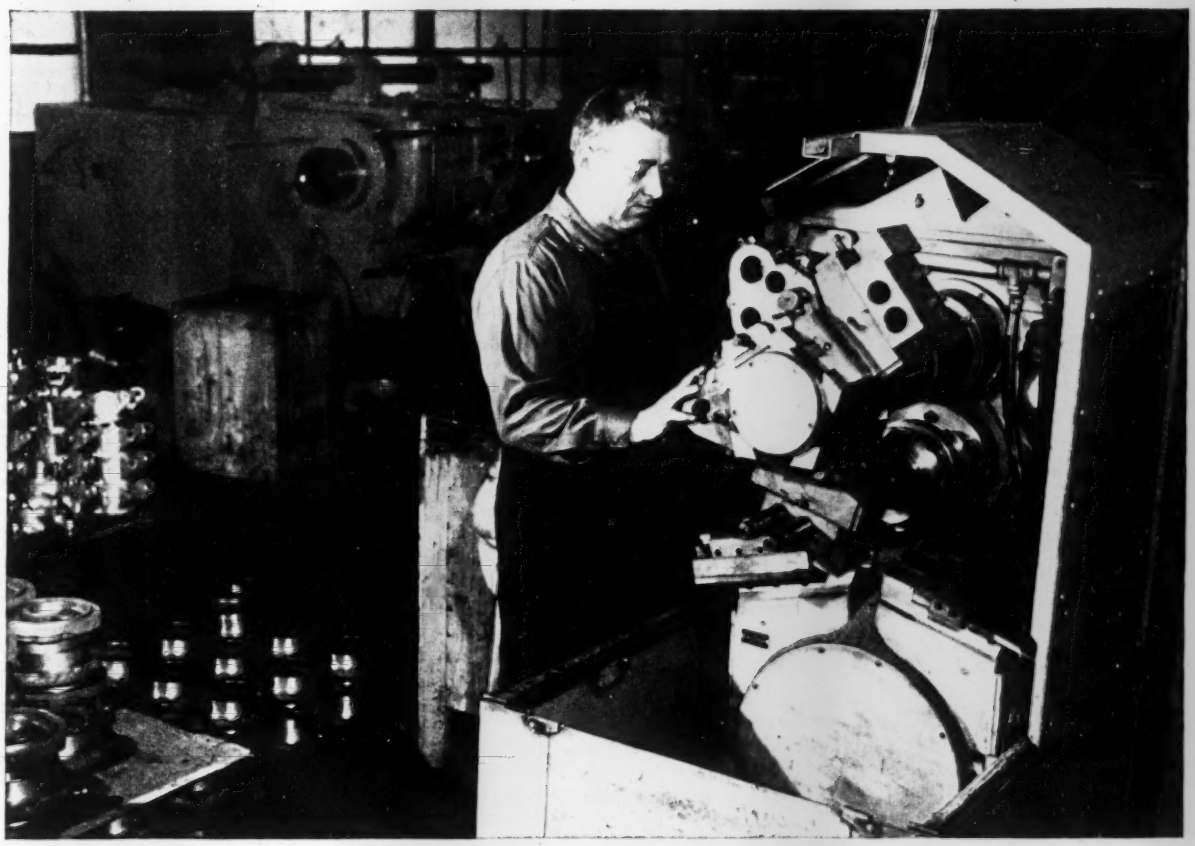
Charles Cobleigh
sales manager
Production Engineering
South Gate, Calif.

• *Sent.—ED.*

Adapting Carbon to Cranes

A recent issue of STEEL carried an item describing the use of specially-cored graphite rods for the lubrication of locomotive wheel flanges ("More Carbon for the Steelmaker," Aug. 10, p. 105). We are interested in the possibility of adapting these rods for use on overhead cranes and would appreciate

Please turn to page 12



When Precision was the Pay-Off!

HALEY MACHINE CO., Springfield, Ohio, recently installed a Warner & Swasey 1 AC Single Spindle Automatic Chucking Machine to turn vital, high-precision hydraulic pump parts for U. S. Army tanks. The job called for extreme accuracy, because these pumps are filled under pressure with an antifreeze that has a tendency to leak where water will not.

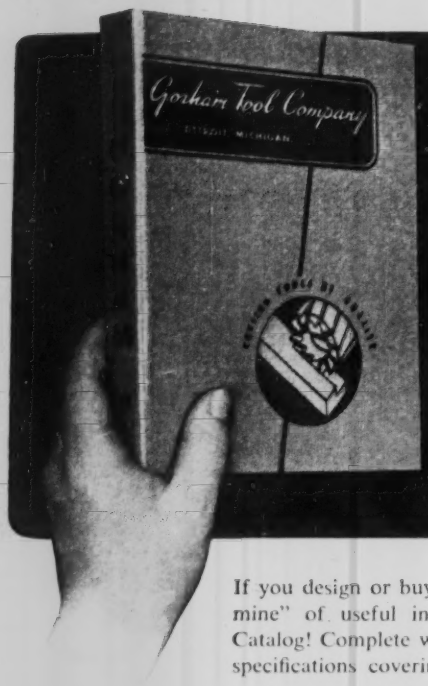
To avoid leakage these extremely close tolerances had to be held—40 to 63 micro-inch finish on surface finishes, .002" on forming, .0008" to .001" on turning, and .001" in concentricity. Maintaining such accuracy with previous methods was difficult—scrap loss was too high. Production had to be speeded up.

The Warner & Swasey Automatic took the function of holding these close tolerances out of the operator's hands—substituting the automatic operation of this high-precision machine for the job. Production was doubled—in some cases tripled! Scrap loss was reduced 12 to 15%!

This type of consistent accuracy is just not possible by manual methods due to the human error of even the best machinists. It is even unusual for an automatic. But the Warner & Swasey 1 AC has the rigidity, the *built-in* accuracy, plus the ability to repeat accurate settings to handle the *most difficult* jobs!

WARNER & SWASEY
Cleveland
PRECISION MACHINERY SINCE 1880

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY



120 PAGES PACKED WITH VALUABLE FACTS ABOUT CUTTING TOOLS

If you design or buy cutting tools, you'll find a "gold mine" of useful information in the Gorham Tool Catalog! Complete with pictures, application data and specifications covering such tools as:

- PLAIN MILLING CUTTERS
- HELICAL MILLING CUTTERS
- SIDE MILLING CUTTERS
- WOODRUFF KEYSEAT CUTTERS
- T-SLOT CUTTERS
- SAWS
- ROTARY SHEARS
- SCREW SLOTTING CUTTERS
- ANGLE CUTTERS
- END MILLS
- CONCAVE CUTTERS
- CONVEX CUTTERS
- CORNER ROUNDING CUTTERS
- TOOL BITS AND CUTOFF BLADES
- WORK REST BLADES
- SPECIAL SAWS
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Methods of holding circular form tools • Calculation of circular form tools • Calculation of flat form tools • Designation of nose elements of single point cutting tools • Speeds and feeds • Controlling cutting tool performance • Cutting tool clinic • Brown & Sharpe tapers without tongues • Brown & Sharpe tapers with tongues • Morse tapers • Jarno tapers • Keyway chart (This section is included in the complete catalog. It can also be obtained separately for distribution among your tool designers and setup men.)

The Gorham Tool Catalog and as many extra copies of the section on Engineering Data as you can use are yours without obligation. Tell us how many of each you need, on your company letterhead.

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"EVERYTHING IN STANDARD AND SPECIAL CUTTING TOOLS"

14401 WOODROW WILSON • DETROIT 3, MICHIGAN

WEST COAST WAREHOUSE: 576 North Prairie Ave., Hawthorne, Calif.

LETTERS

Concluded from page 10

any information which you might be able to furnish as to a source of supply.

M. E. Wertz
Lehigh Structural Steel Co.
Allentown, Pa.

• *We suggest you write directly to the authors of that article, J. S. Copley and E. F. Sipp Jr., both in the Pittsburgh sales office of Union Carbide & Carbon Corp.—ED.*

Who and Where Department

We are interested in learning the names of topgrade firms who could handle some time-study work in our plant. We would be very grateful if you would advise us of the names of any firms which you would recommend. We would be interested in a firm that has had experience in a structural fabricating plant.

Guilford Glazer
Glazer Steel Corp.
Knoxville, Tenn.

• *We believe that the National Council of Professional Industrial Engineers, 703 Third Ave., South, Minneapolis 2, would be in the best position to recommend names of firms or engineers competent to handle time-study work in your plant.—ED.*

Thank You, Mr. Ault

I would like to say that I found your "Management Series" very outstanding. I always enjoy reading your articles and editorials and find them timely, factual and constructive. I am sure that suppliers and customers as well benefit greatly from your material.

T. J. Ault
vice president and
assistant general manager
Detroit Gear Division
Borg-Warner Corp.
Detroit

New Way To Finish Stainless

Your Aug. 24 issue contained an article we are very much interested in, entitled "Surface Finishing Stainless Steel" (p. 82). We manufacture hard-to-get-at parts of type 420 stainless, and the electro polishing method using a solution of butyl alcohol and phosphoric acid intrigues us. We would appreciate more information on this process.

L. R. Schroeder
Anchor Products Co.
Addison, Ill.

• *Write to W. F. McFee, Armco Steel Corp., Middletown, O.—ED.*

Industrial Designers En Masse

In STEEL's "Metalworking Outlook" for Sept. 7 (p. 54), you mention the Society of Industrial Designers. Will you please send me information on its background and its future plans.

Henry C. Fasig Jr.
Oerlikon Tool & Arms Corp. of America
Asheville, N. C.

• *The Society of Industrial Designers, 48 E. 49th Street, New York 17, is an association of men in the industrial design field. Members include about 135 of the country's industrial designers, heads of design and development departments of major companies and independent designers working for many companies. We suggest you write the society for additional information.—ED.*

He Knows!

EXPERIENCE is the truest guide to production efficiency and economy . . . and experience throughout industry proves that Roebling wire rope is your one top choice for avoiding delays, cutting down replacements and saving wire rope dollars.

All over the country, large numbers of experienced wire rope users definitely prefer Roebling wire rope. Call your nearest Roebling office or distributor for a Roebling recommendation.

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New research developments make it possible to combine the design advantages of the original Diamond grid and the "Z" grid. The Diamond "Z" gives you the structural design of diamond bracing and overall mechanical strength, and still retains the uniform density of grid members so well achieved in the "Z" design.

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1. A grid built to the demands of users with top performance and long life.
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4. A grid that cannot "grow" under the toughest kind of treatment . . . with that extra measure of strength for every application.
5. A grid that is built with diamond bridge-like construction . . . with extra strong members to withstand abuse.
6. A grid that delivers the rugged service that future demands will require . . . demonstrated in every conceivable test for long, dependable operation.

Write for the new Catalog featuring this amazing grid that delivers more for your money.

TODAY THE

GOULD DIAMOND BATTERIES

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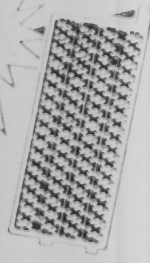
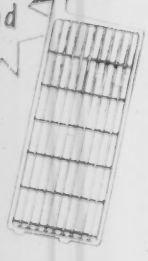
1st



This basic grid design was advanced for its day, highly efficient. For many years, it was the standard by which other batteries were judged.

THE "Z" GRID

2nd



Here was a tremendous advance in battery design. Intensive Gould research produced an improved casting method, which for the first time made possible larger, longer-life grid members.

GOULD

GOULD-NATIONAL

Visit us at the National Industrial Packaging and Materials Handling Exposition, Boston, October 20 to 22, Booth 317.

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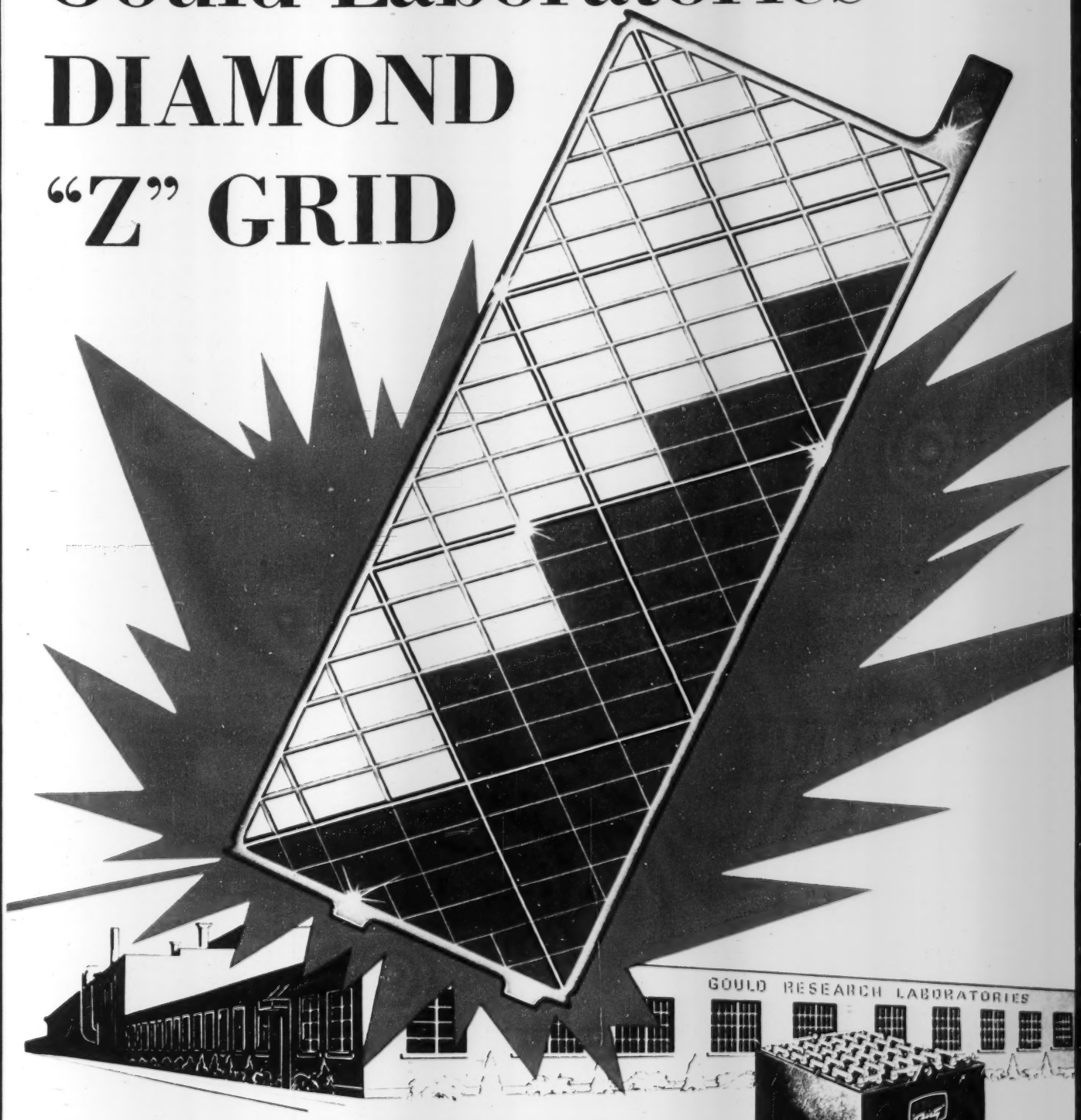
Gould Laboratories
DIAMOND
"Z" GRID



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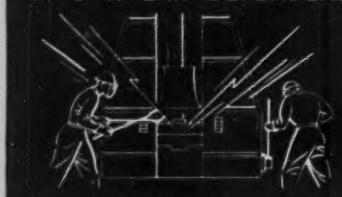

keep harmful noises *out!*

If your workers "can't hear themselves think," chances are *you'll* hear about it in lowered production and damaged hearing.

Loud industrial noises sap energy, interfere with job concentration, and sometimes result in serious hearing loss. M.S.A. Ear Defenders block out these costly noises, yet allow wearer to hear warning signals, speech, and telephone conversation.

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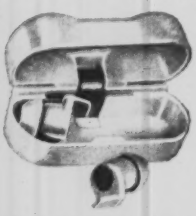

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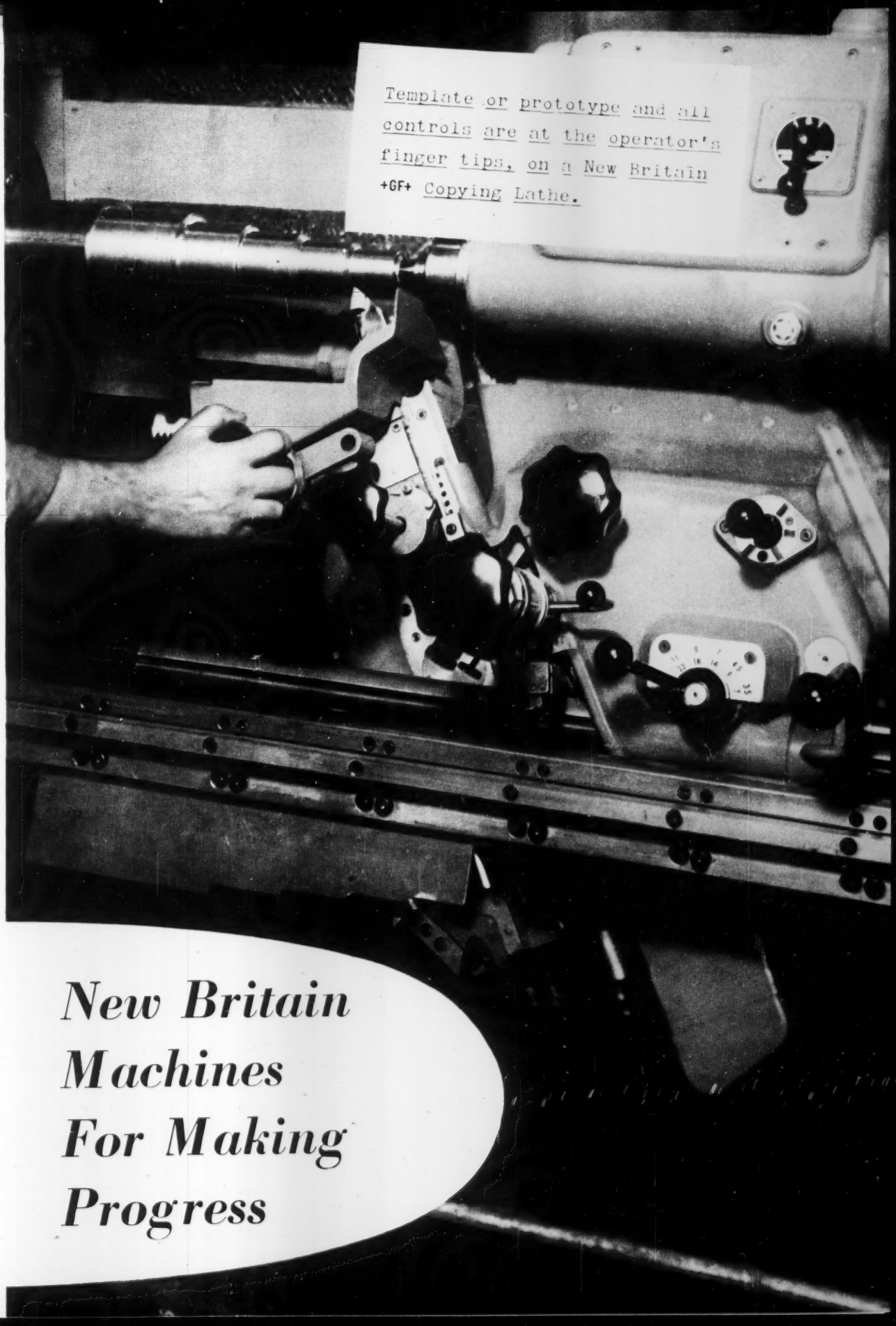
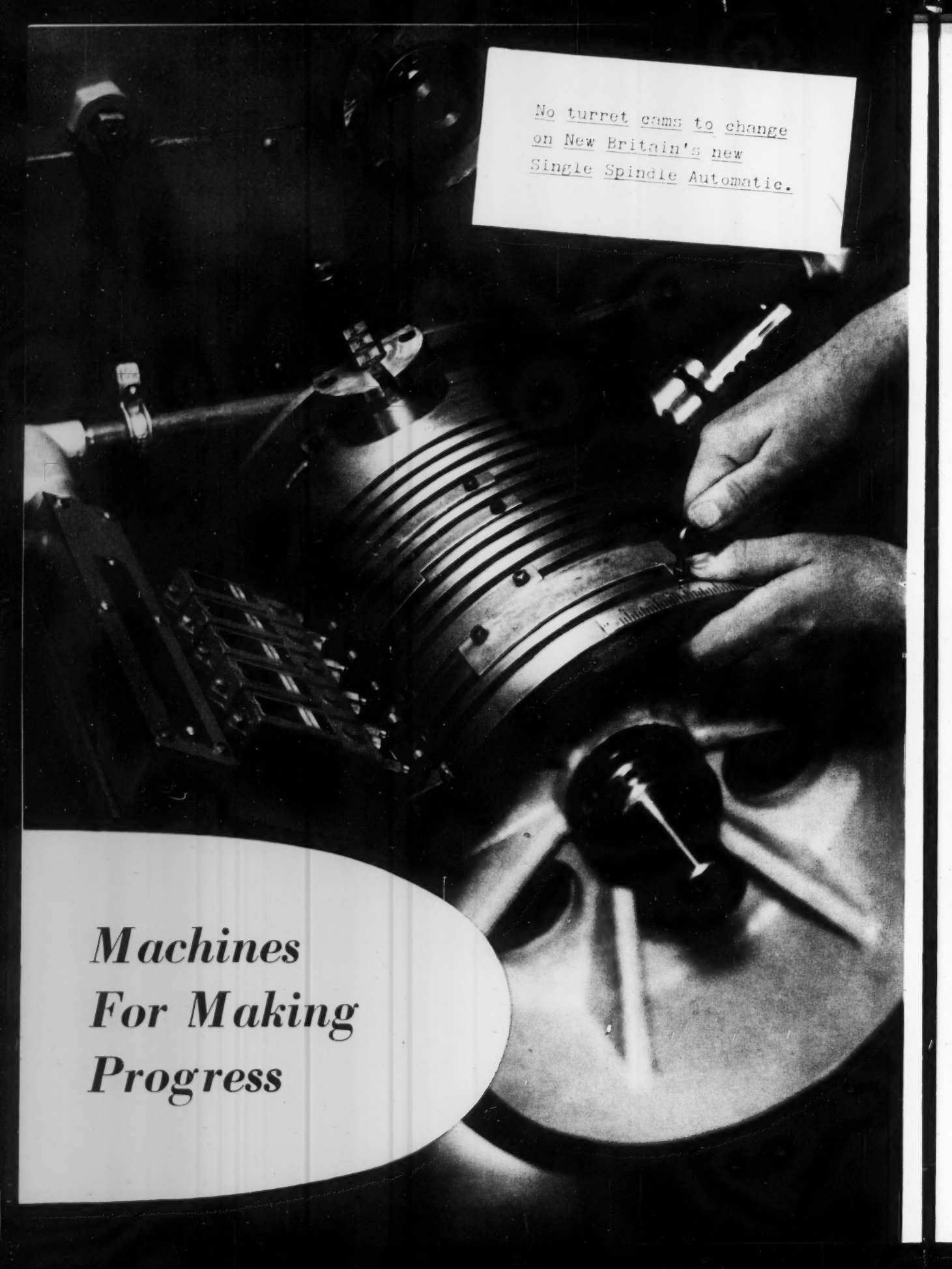
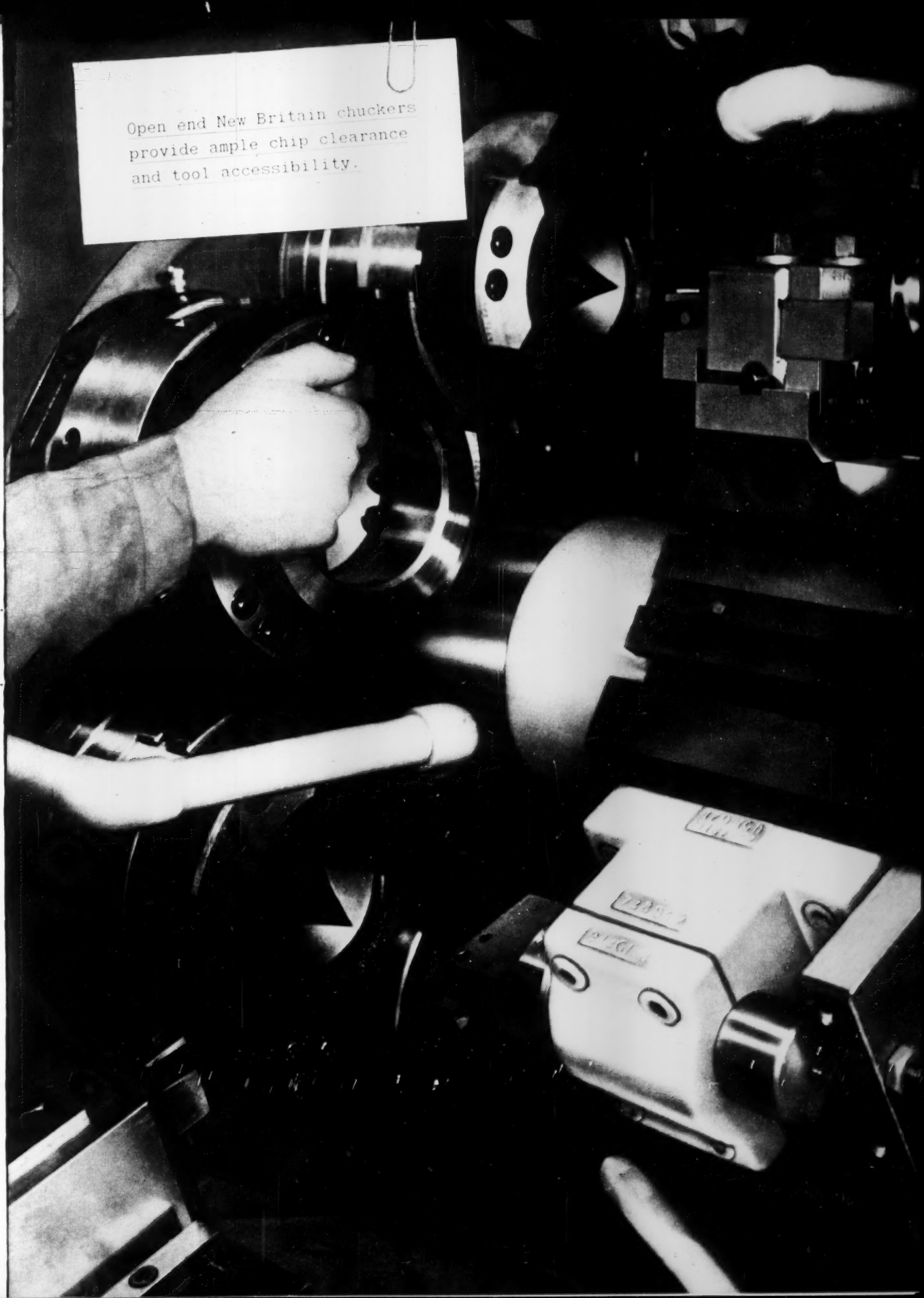


New Britain Machines For Making Progress



Machines For Making Progress



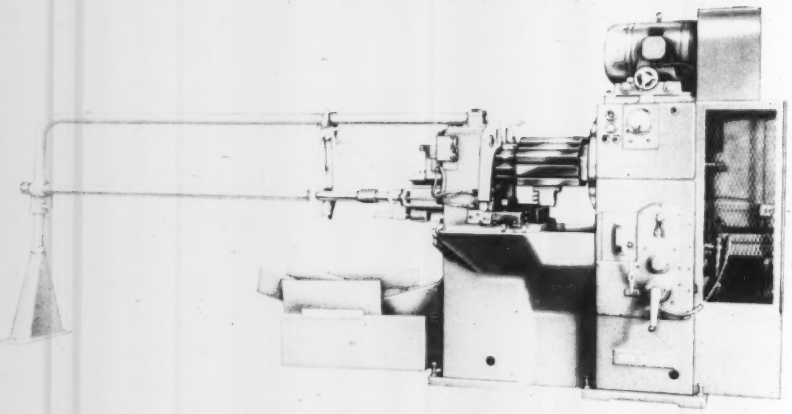
Open end New Britain chuckers provide ample chip clearance and tool accessibility.

New Britain +GF+ Copying Lathe

Built on a new principle with copying saddle mounted below the spindle and no conventional bed to accumulate chips which fall free and accumulate through the back of the machine. Every control is at the operator's finger tips. Template or prototype is also on operator's side. Powerful drive and a wide range of speed and feed ranges make it a profitable producer on short or long runs.

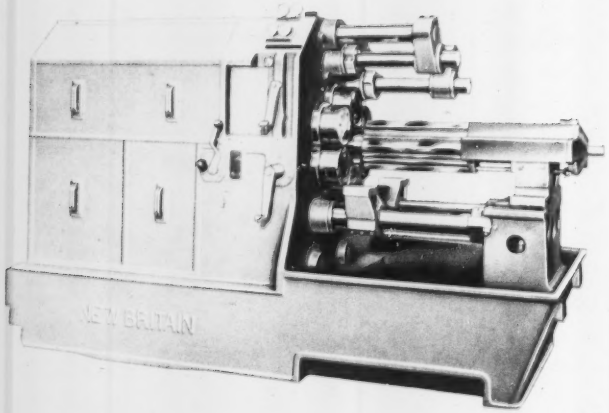
Model 126

New Britain single spindle automatic which belongs in almost every turret lathe department — to cut costs on pieces on the border line between turret lathe and multiple spindle production. Remarkable for mechanical simplicity and simplicity of operation. A new approach in single spindle turning, it incorporates features which guarantee quick set up and manpower savings, on both short and long runs.



Model 675

Six spindle automatic chucking machine. This line of New Britains includes four, six and eight spindle machines, notable for rigidity, accessibility and permanent accuracy. Open end construction makes tooling, loading, operating adjustments and chip removal simple and easy, reducing down time to a minimum. This, combined with ample power and high spindle speeds, makes them outstanding for sustained high production.



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AUTOMATIC BAR AND CHUCKING MACHINES • PRECISION BORING MACHINES
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NEW BRITAIN +GF+ COPYING LATHES

The NEW BRITAIN MACHINE COMPANY

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You can't buy a better degreasing solvent than "TRICLENE" D

(TRICHLORETHYLENE)

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Du Pont chemists *built* this rugged solvent. They put into it the results from over 20 years of practical and technical experience in metal degreasing. They made the dependable product which is in successful use in thousands of manufacturing plants, in all types of degreasing equipment, handling all common metals.

"Triclene" D is especially made for the exacting requirements of modern metal cleaning. It is the best degreasing solvent Du Pont has ever made. And with it goes expert technical assistance from Du Pont and your local distributor. E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington 98, Delaware.

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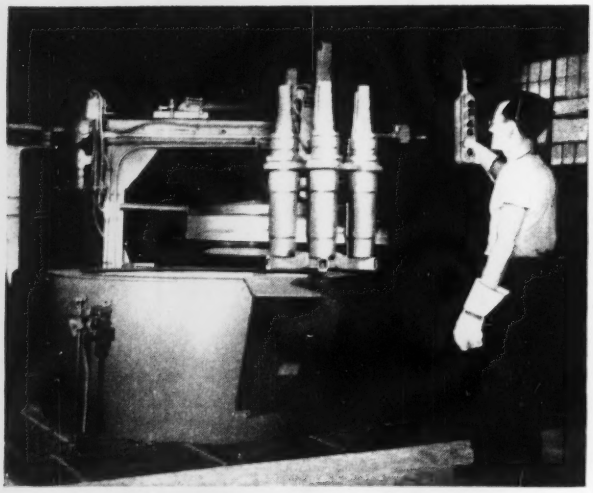
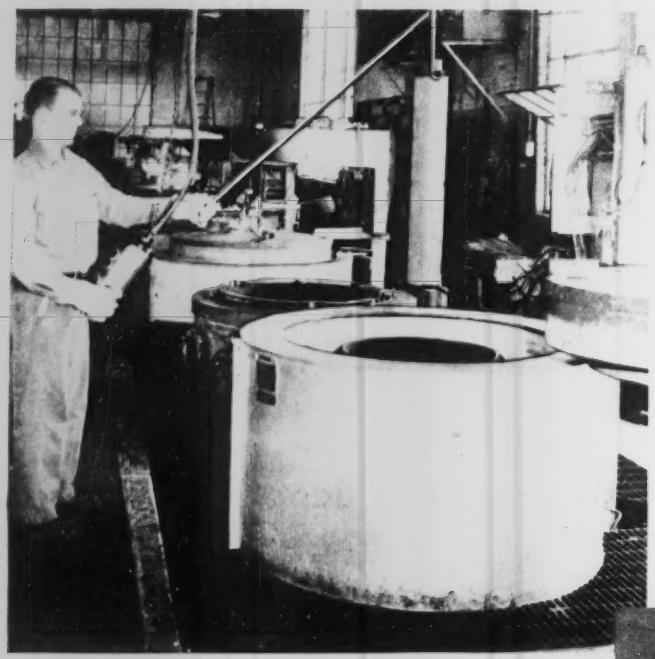
4 REPORTS ON MICROCARB CONTROL... FROM PRODUCTION HEAT TREATS





DISTORTION NEGLIGIBLE

● Taft-Peirce in Woonsocket, R. I. installed their Homocarb® furnace with Microcarb Control to improve physical characteristics . . . particularly by maintaining surface carbon content during hardening of these aircraft "prop" shafts made of AMS 6415 steel. Each shaft measures 6 inches in diameter by 30 inches long and weighs 125 pounds.

Six shafts are run at once . . . loads are brought to 1550 F and held for 4 hours with a carbon setting of 0.45% . . . then oil quenched. The firm reports that specifications for strength, elongation, reduction in area, etc. are held without difficulty on every load; work comes out clean and distortion is negligible.

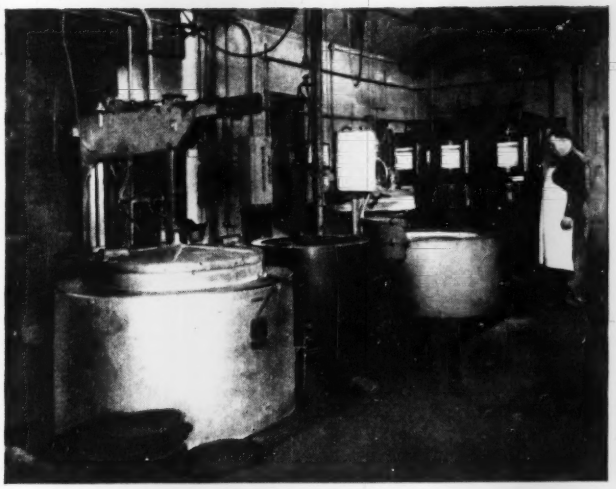
TOLERANCES HELD

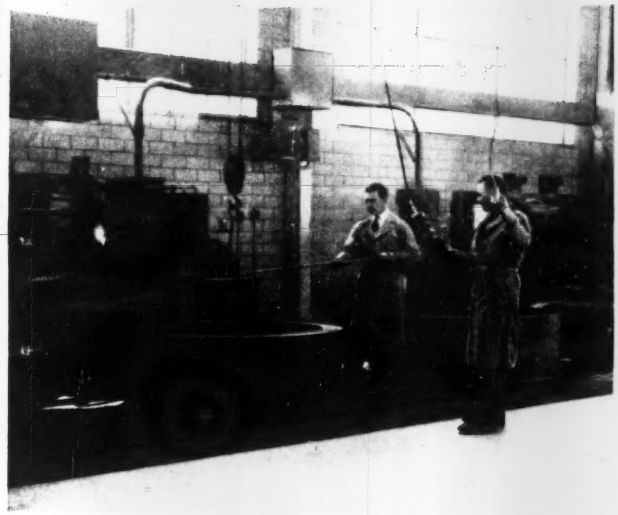
● This row of L&N furnaces is in the Heat Treating Department of Jones and Lamson, Springfield, Vt., manufacturers of turret and automatic lathes, thread grinders, comparators, dies and chasers. In the foreground is a Homocarb furnace with Microcarb Control panels are against the wall at the right.

The part being removed is a work slide bar for a J&L Model D Vertical Slide Form Grinder. The bar is made from 5% chrome, 1% carbon air hardening steel. Specifications are 64 plus, in Rockwell C uniform surface hardness. These bars are ground to a ± .0002 inch tolerance on outside dimensions and zero on straightness and eccentricity and must remain stable. Control of surface carbon chemistry and distortion during heat treatment are extremely important.

● At right is an adjusting cone for the spring collet on a J&L Bar Type Turret Lathe. These cones are 8" in diameter by 5" deep with ⅜" walls, and are made from 5% chrome, 0.10% carbon air hardening carburizing steel. While machining and physical characteristics of this steel are excellent, it requires precise control of furnace atmosphere during carburizing to meet J&L's requirements for uniform surface hardness of 60 to 63 Rockwell C. J&L carburize these parts at 1750 F with Microcarb atmosphere control air cool then stress relieve them in an L&N Homo Tempering furnace at 300 F. They report not only that they have no difficulty meeting specifications on individual loads, but can reproduce the same cycle time after time.

(Advertisement)





3 FINISHING REDUCED

● Just in front of the control panels is the 15" x 18" Homocarb furnace with Microcarb Control in which the W. H. Nichols Company, Waltham, Mass., heat treat aircraft gears like the one above. The gears, measuring 3½ inches in diameter, are made of AMS 6260 and 6274 nickel-chromium-molybdenum steel. Prescribed specifications call for a minimum 81 Rockwell "A" hardness, with a .025 to .040 case free of carbide network. The operator simply sets temperature control to 1650 F and carbon control to 0.90.

Nichols also uses this furnace to harden AISI 4140 steel pump shafts. The precise L&N control eliminates undesirable decarburizing or carburizing and substantially reduces successive finishing operations that were formerly necessary.

4 OPERATION AUTOMATIC

● These Homocarb furnaces with Microcarb Control are used for production-line carburizing and heat treating of Universal Joint spiders made by Warner Machine Products Inc. Twenty-four of the large spiders are loaded at a time. Material is SAE-8720 steel. The load is held at 1700 F to obtain a 0.090 inch case depth with the atmosphere controlled at 0.90% to 0.95% carbon. Parts are cooled in the furnace to about 1525 F then direct oil quenched. Warner obtains a hardness of about 63 Rockwell C.

Although none of the operating personnel in this Warner Machine Plant had ever had any experience in carburizing and heat treating prior to this installation, control is so automatic that some 800,000 pounds of work were run through Warner's four furnaces in the first few months without a single loss due to heat treatment.

WHAT MICROCARB CONTROL CAN DO FOR YOU

With Microcarb Control you get:

- ***Uniform Controlled Atmosphere and Temperature***
- ***Continuous Records of Carbon and Temperature***

This means that:

Heat Treat Superintendents can accurately reproduce any heat treating cycle to exact specifications.

Works Managers can increase production per square foot of floor space.

Metallurgists can specify and get any cycle within a carbon range of 0.15 to 1.15 and a temperature range of 1500 to 1750 F.

Production Superintendents can maintain a high continuous rate of quality production.

Management has proof of the quality of their product.

The Homocarb Method with Microcarb Control is available to help you solve your heat treating problems as it is now doing in nearly a hundred plants. For more information just write us at 4957 Stenton Avenue, Phila. 44, Penna.

LEEDS NORTHRUP
instruments *automatic controls • furnaces*

Jrl. Ad T 623/33

What's Screwy? by Phillips

"Ed has discovered that Phillips Cross-Recessed-Head Screws are definitely decorative."

PERFECTLY MATED! Only Phillips Drivers are perfectly mated to Phillips Screws. Look for the name Phillips on the shank.

DECORATIVE APPEARANCE is but one of many advantages of Phillips Screws. They cut driving time up to 50%, eliminate driver skids and split screw heads. These screws add structural strength, set up tighter, resist vibration. To save time, work, money insist on Phillips Screws — Wood, Machine, Tapping Screws or "Sems."

PHILLIPS *Cross-Recessed-Head* SCREWS

X marks the spot... the mark of extra quality

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TODAY'S . . AND THE FUTURE'S . . . FINEST FASTENER

Photos courtesy Kirk & Blum, Cincinnati, Ohio

72 HOLES

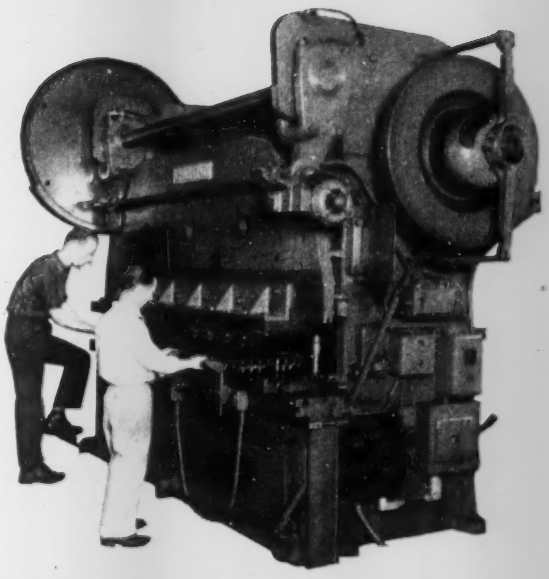
where they belong

Economical assembly depended on maintaining the accurate spacing of these 72 holes and their accurate positioning on this 10-gauge sheet.

This Cincinnati Press Brake is giving a high production at low cost by its speed and accuracy of performance, which insures rapid low cost assembly.

As a press, they offer high production with low investment. As a Press Brake, their low set-up costs, quick change-overs and versatility bring profits.

Write for Catalog B-4 where many examples of the versatility of Cincinnati Press Brakes are illustrated.



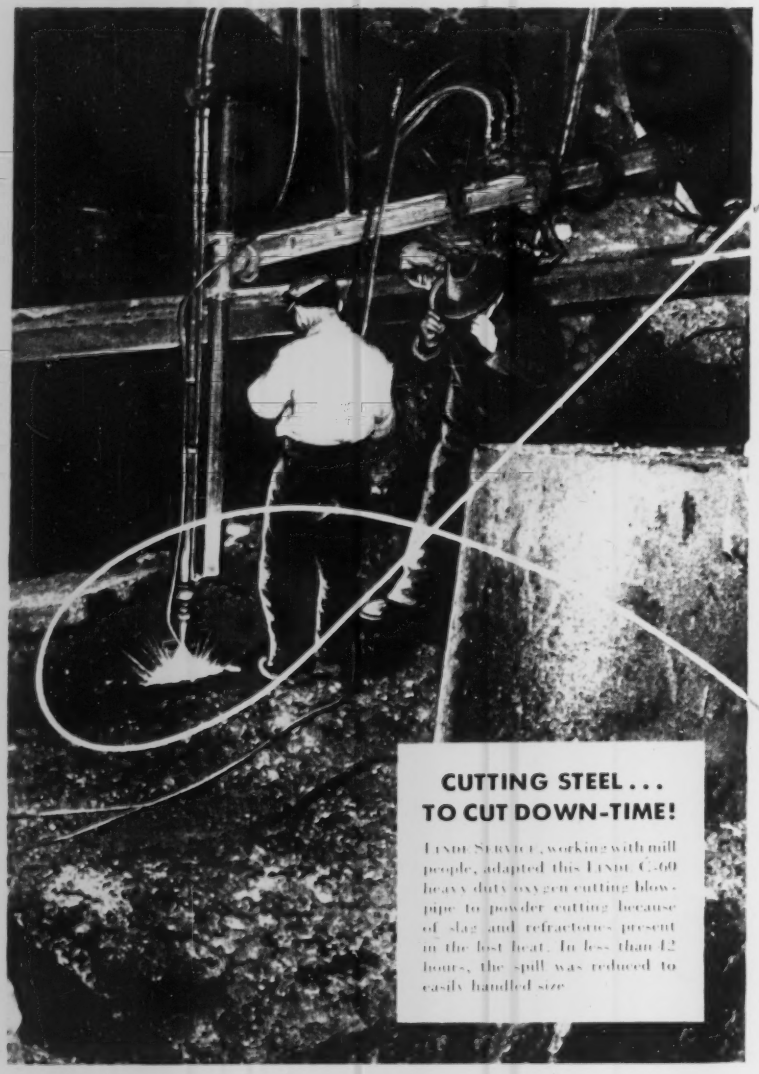
CINCINNATI

THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A. SHAPERS • SHEARS • BRAKES

How Oxygen...and LINDE SERVICE*

HELPED REMOVE A "LOST HEAT" OF STEEL IN A *DAY*...INSTEAD OF *MONTHS*



CUTTING STEEL...TO CUT DOWN-TIME!

LINDE SERVICE, working with mill people, adapted this LINDE C-60 heavy duty oxygen cutting blowpipe to powder cutting because of slag and refractories present in the lost heat. In less than 12 hours, the spill was reduced to easily handled size.

Tons of molten steel, pouring through a breakout in an open hearth furnace, settled in the furnace pit.

The last time a heat was lost, the mill had to wait three months for special equipment to remove the huge spill. That meant costly delay in repairing the furnace and a floor cluttered with a mass of steel.

This time, however, the mill management called in LINDE SERVICE to help. LINDE engineers recommended bringing in a LINDE heavy duty oxygen cutting blowpipe that was operating in the mill's scrap cutting yard. A temporary fixture was built, and in less than 12 hours the lost heat was cut into sections that were easily removed to the scrap yard. The furnace was repaired and back in operation in record time, producing steel that would otherwise have been lost.

*** LINDE SERVICE**

is the unique combination of research, engineering, and over 40 years of accumulated know-how that is helping LINDE customers save money and improve production in their uses of oxygen and oxy-acetylene processes.

If you use oxygen in your operations, LINDE SERVICE can mean dollar savings to you. Let us tell you more about it.

LINDE AIR PRODUCTS COMPANY

A Division of UNION CARBIDE AND CARBON CORPORATION

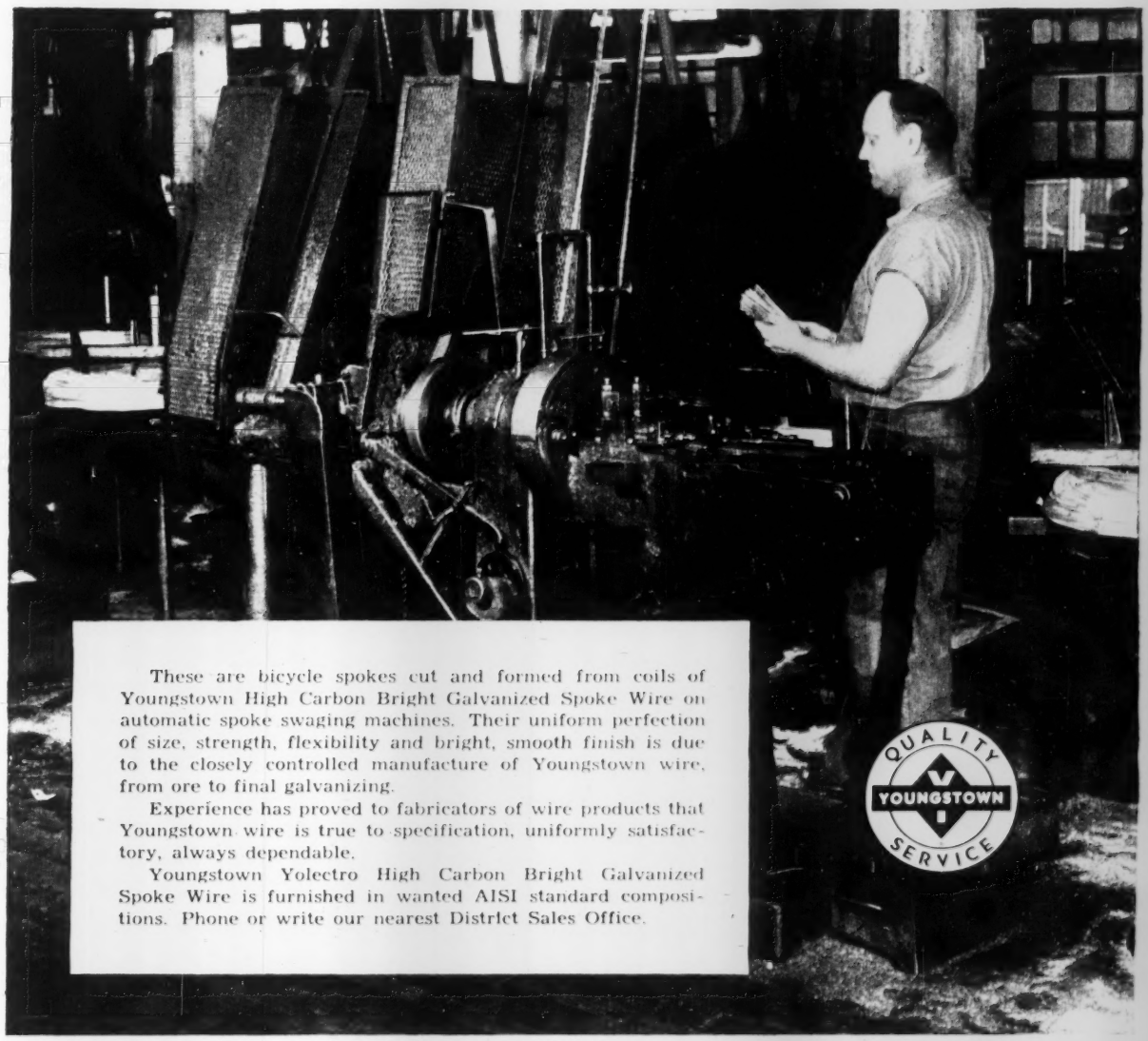
30 East 42nd Street New York 17, N. Y.

Offices in Principal Cities

In Canada: Dominion Oxygen Company, Limited, Toronto

Linde Trade-Mark

YOU GET BRIGHTER, MORE FLEXIBLE SPOKES WITH YOUNGSTOWN HIGH CARBON SPOKE WIRE



These are bicycle spokes cut and formed from coils of Youngstown High Carbon Bright Galvanized Spoke Wire on automatic spoke swaging machines. Their uniform perfection of size, strength, flexibility and bright, smooth finish is due to the closely controlled manufacture of Youngstown wire, from ore to final galvanizing.

Experience has proved to fabricators of wire products that Youngstown wire is true to specification, uniformly satisfactory, always dependable.

Youngstown Yolectro High Carbon Bright Galvanized Spoke Wire is furnished in wanted AISI standard compositions. Phone or write our nearest District Sales Office.

QUALITY · YOUNGSTOWN · SERVICE

Youngstown HIGH CARBON SPOKE WIRE

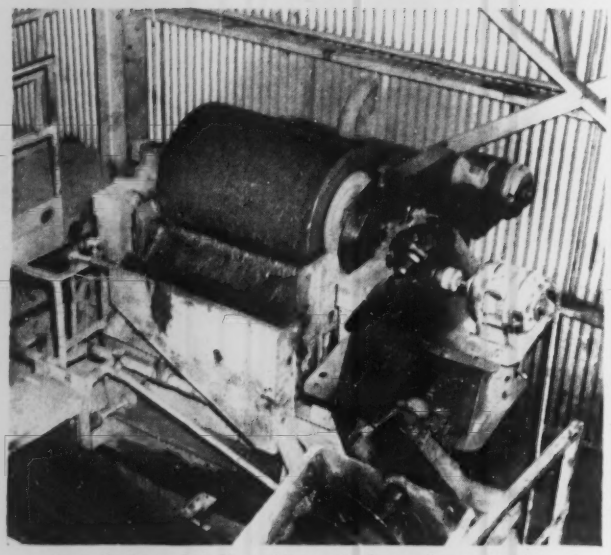
THE YOUNGSTOWN SHEET AND TUBE COMPANY *Manufacturers of Carbon, Alloy and Yoloy Steel*

General Offices: Youngstown, Ohio - Export Office: 500 Fifth Avenue, New York 36, N. Y.

PIPE AND TUBULAR PRODUCTS - CONDUIT - BARS - RODS - COLD FINISHED CARBON AND ALLOY BARS - SHEETS - PLATES - WIRE - ELECTROLYTIC TIN PLATE - COKE TIN PLATE - RAILROAD TRACK SPIKES

New Horizons in . . .

MAGNETIC SEPARATION



Installation of Jeffrey Magnetic Drum Separator in a Heavy Media plant treating iron ore.

JEFFREY

— is *pioneering* continuously in the modernization of wet magnetic separation processes.

— is *promoting* exclusively drum-type separators, simple, efficient, compact, dependable.

— *introduced* Jeffrey-Steffensen Counter-flow Separators for greatly improved iron ore concentration.

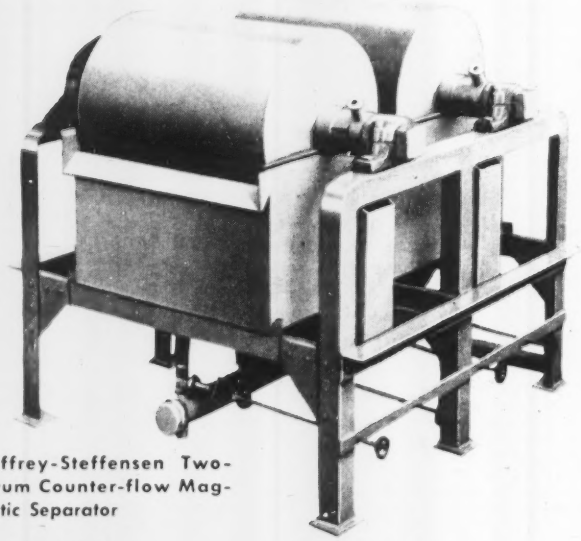
— *originated* Counter-flow units for the ultimate in recovery of magnetic medium in Heavy Media and Cyclone processes.

— is *looking ahead* by developing and improving magnetic equipment to meet the future needs of the mineral industries.

Jeffrey Magnetic Separators Excel

The Jeffrey-Steffensen Counter-flow Separator was scientifically developed on the job for unequaled production of slime-free, dewatered magnetic concentrate of highest possible grade, without the loss of valuable magnetics in the tailing. Available in one, two or three stages to meet the particular requirements of your concentration problem.

Send for descriptive literature and technical performance data.



Jeffrey-Steffensen Two-Drum Counter-flow Magnetic Separator

THE JEFFREY MANUFACTURING CO.

ESTABLISHED 1877

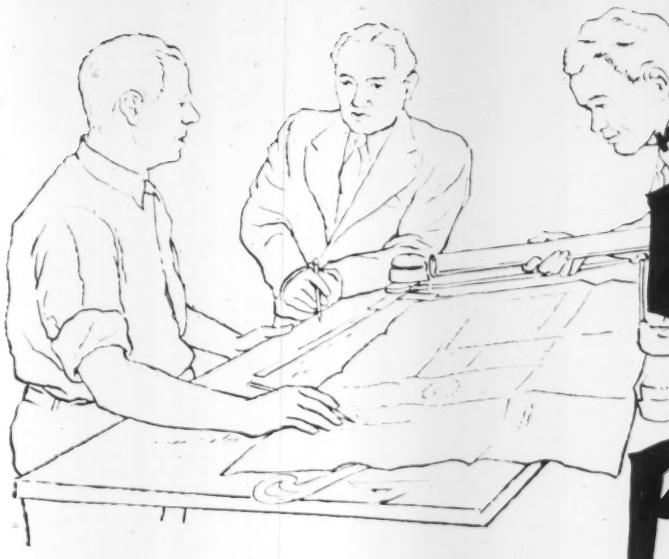
Columbus 16, Ohio

sales offices and distributors in principal cities

PLANTS IN CANADA, ENGLAND, SOUTH AFRICA

IF IT'S MINED, PROCESSED OR MOVED

. . .IT'S A JOB FOR JEFFREY!



HOW TO PLACE Engineers ON YOUR Production Line

If you want:

more production with less human effort . . .

fewer rejects and less scrap . . .

closer limits on tolerances . . .

less maintenance costs . . .

less downtime . . .

then you must have PRODUCTION-LINE ENGINEERING.

Whether you are removing substantial amounts of stock or just a few tenths of thousandths of an inch, economical "precision production" is your goal. The Microhoning process gives you stock removal, geometry (roundness and straightness), size control and uniform surface finish. Micromatic Hone Corporation maintains a staff of experienced field and design specialists who are ready to offer you complete engineering service in your processing problems on cylindrical or flat surfaces. Learn how you can have a combination of precision and speed on your production line. Just contact our office nearest you.

PRECISION PRODUCTION THROUGH MICROHONING

MICRO MATIC

TRADE MARK

MICROHONING MACHINES • TOOLS • FIXTURES • ABRASIVES

For more information on the Microhoning process write to:

Field Engineering B6
Micromatic Hone Corporation
8100 Schoolcraft Avenue
Detroit 38, Michigan

MICROMATIC HONE CORPORATION

8100 Schoolcraft Avenue, Detroit 38, Michigan

MICROMATIC HONE CORP.
MICRO MOLD MFG. DIV.
Boston Post Road
Guilford, Connecticut

MICROMATIC HONE CORP.
614 Empire Building
206 So. Main Street
Rockford, Illinois

MICROMATIC HONE CORP.
1535 Grande Vista Avenue
Los Angeles 23, California

MICROMATIC HONE LTD.
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MICROMATIC HONE CORP.
MICRO MOLD MFG. DIV.
231 So. Pendleton Avenue
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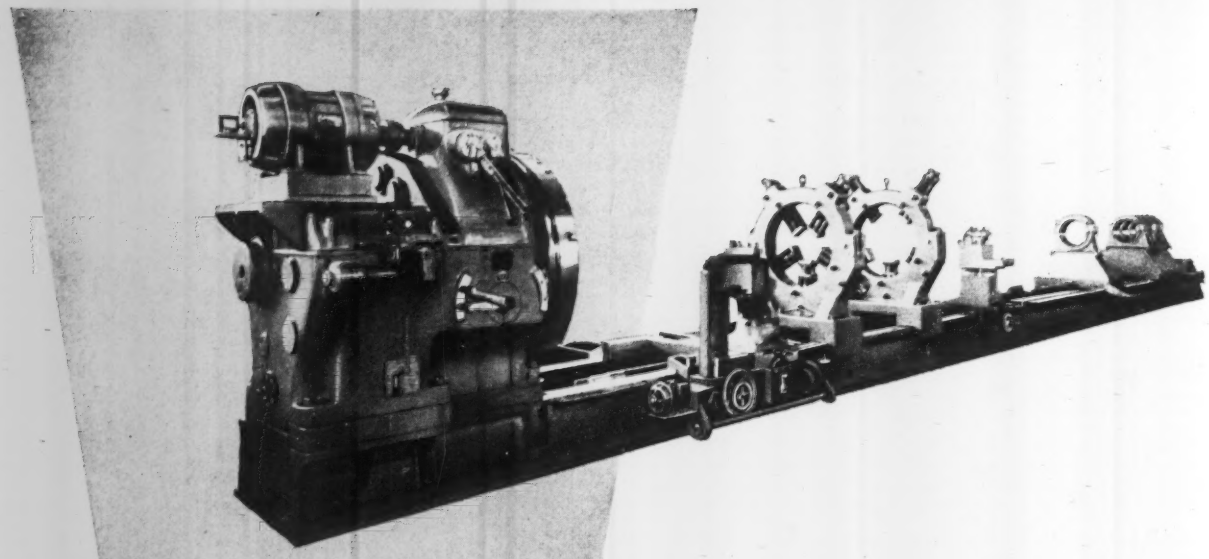
REPRESENTATIVES:

Overgard Machine Tool Company, 234 Commonwealth Bldg., Denver 2, Colorado • Allied Northwest Machine Tool Corp., 103 S. W. Front Ave., Portland 4, Oregon

REPRESENTATIVES IN ALL PRINCIPAL COUNTRIES



Big Increase in swing and bore boosts lathe's roll capacity

Before: 72" swing, 12"-boring bar.
After: 84" swing, 30" boring bar.

Result: This Niles Boring Lathe now makes hollow rolls up to 60" in diameter and 30' in length for a manufacturer of paper mill machinery.

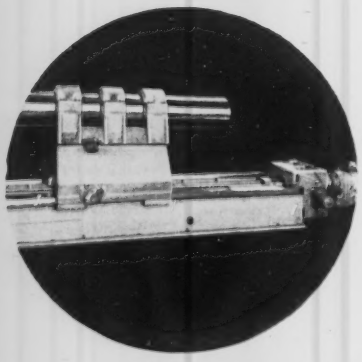
How Simmons Engineered Rebuilding did it:

New boring rests, built by Simmons, were installed to take 30" boring bar; 6" raising blocks inserted under headstock and each steady rest. Also added was an entirely new turning carriage engineered with self-contained traverse and feed.

In addition, Simmons completely rebuilt and modernized this lathe "from the ground up." Simmons technicians dismantled it down to main castings, thoroughly cleaned and tested all its bearings, replaced worn parts, installed hardened steel ways, renewed all working surfaces by milling and grinding, rewired all electrical circuits...and introduced many other up-to-the-minute features to make this lathe operate at an even higher capacity than when new.

Can Engineered Rebuilding work for you?

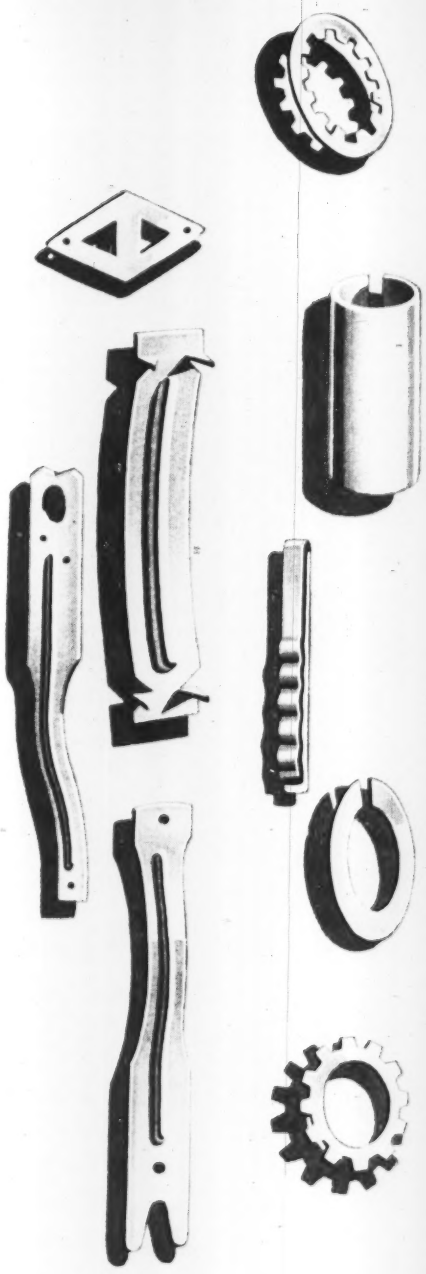
It's easy to find out. On your next maintenance check, note especially those complex, hard-to-replace machine tools. Are they operating as well as they might? If not, list the ones you can temporarily spare. Then, send us this list of machines. We'll promptly quote prices and deliveries, enabling you to judge for yourself the value of Engineered Rebuilding.



Close-up view shows rebuilt boring carriage and drive mechanism.

SIMMONS MACHINE TOOL CORPORATION
1755 North Broadway, Albany 1, New York
New York Office: 50 East 42nd Street
Phone in New York: MUrray Hill 2-7041 Phone in Philadelphia: VAlley 3-3143
Phone in Pittsburgh: PEnhurst 1-3300

SIMMONS
ENGINEERED
Rebuilding
GIVES MACHINE TOOLS A NEW LEASE ON LIFE



For easier blanking or forming...depend on the uniformity of

WEIRTON

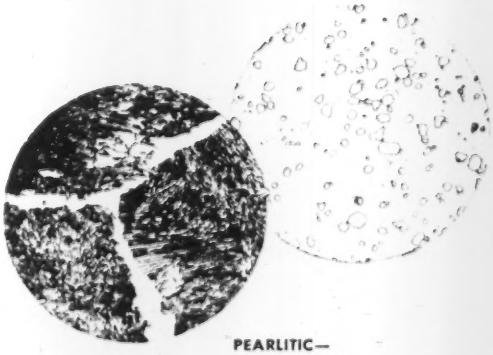
High-Carbon Strip Cold-Rolled Spring Steel

The requirements of high-speed cold forming or blanking are met consistently by Weirton cold-rolled spring steel. Formulated to exact specifications for each job, it makes the operation easy and economical for products in which high fatigue resistance is essential.

To an unusual degree, Weirton high-carbon strip cold-rolled spring steel possesses these highly important characteristics:

- Uniform chemical and physical properties
- Exact consistency of grain structure
- Accurate response to heat treatment
- Exceptional uniformity of gauge and width
- Controlled decarburization limits

It is supplied with the desired chemical composition and for specific heat treating and hardness ranges in strips up to seven inches wide.



SPHEROIDIZED—
Annealed, soft and ductile. Ideal for cold forming operations.

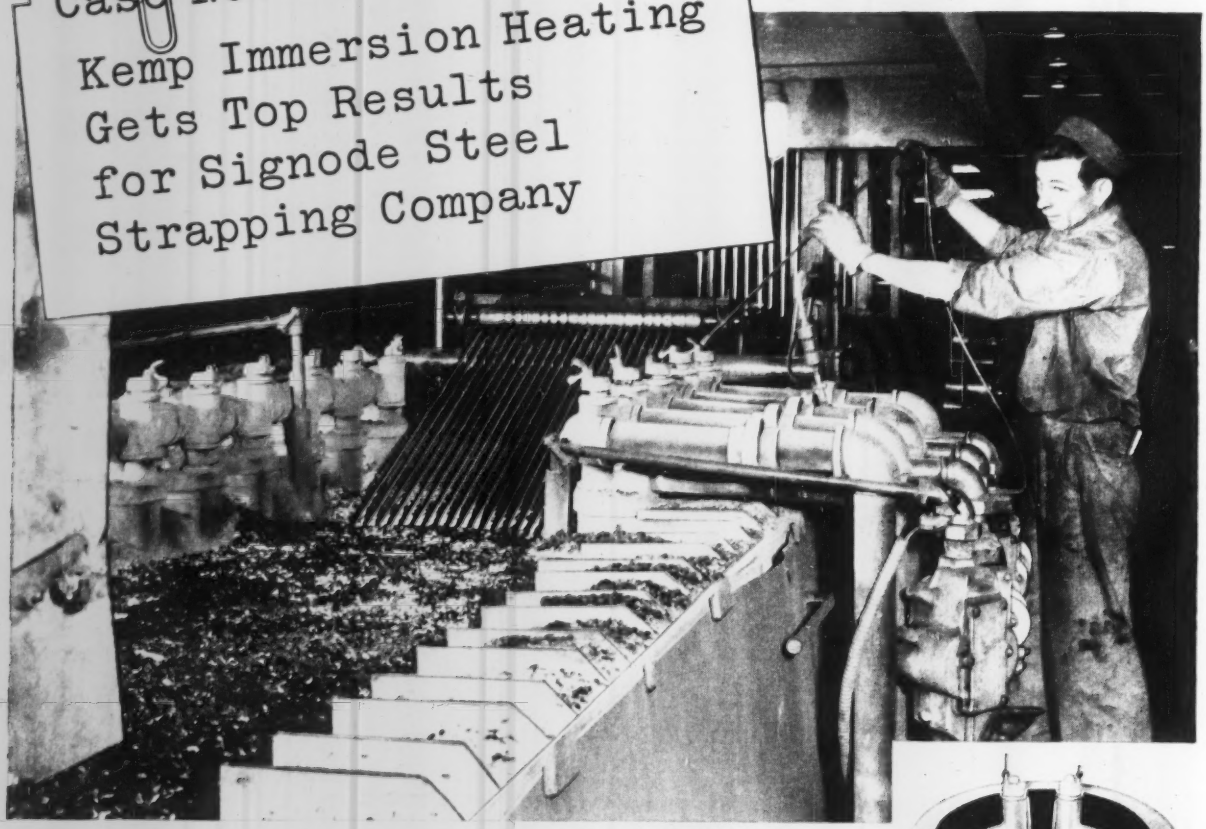
PEARLITIC—
Temper-rolled in controlled hardness and strength for blanking.

WEIRTON STEEL COMPANY
WEIRTON, WEST VIRGINIA

NATIONAL STEEL CORPORATION

Case No. 42

Kemp Immersion Heating Gets Top Results for Signode Steel Strapping Company



How Signode Steel Strapping Co. tempers 650 feet of steel strap every minute

At the Signode plant in Sparrows Point, Md., turning out up to a thousand miles of steel strap daily calls for fast, efficient production line techniques. One highly important phase in the final processing is the tempering bath. Here, Signode called on Kemp Engineers to supply the 15 ton, gas-operated Immersion Melting Pot shown above. Now steel strap is uniformly tempered at the rate of 650 feet per minute.

Kemp Offers More Advantages

By installing Kemp Immersion Heating, Signode benefits in many ways. Unlike underfired pots, Kemp pots are *not* subject to *periodic* and expensive shutdowns . . . won't crack or break. They operate *continuously* at maximum heating efficiency with a *substantial* savings in fuel costs. Offer a greater heating surface, faster heat recovery, lower dross formation, even lower room temperatures. At the same time, this Kemp unit enables Signode to eliminate costly temperature override and open flame fire hazards.

Let Kemp Solve Your Problems

These same advantages apply to all types of melting or heating operations. Whether you are engaged in tempering, annealing, descaling, coating, etc., you can rely on Kemp Immersion Heating. Why not find out how Kemp Engineers can help you, save you money?

This 10 ton oval pot is typical of the many Kemp installations now in use. Features Kemp Carburetor, part of all Kemp equipment, to deliver complete combustion . . . without waste . . . without tinkering. One-pipe air and fuel feed reduces installation costs, simplifies maintenance.

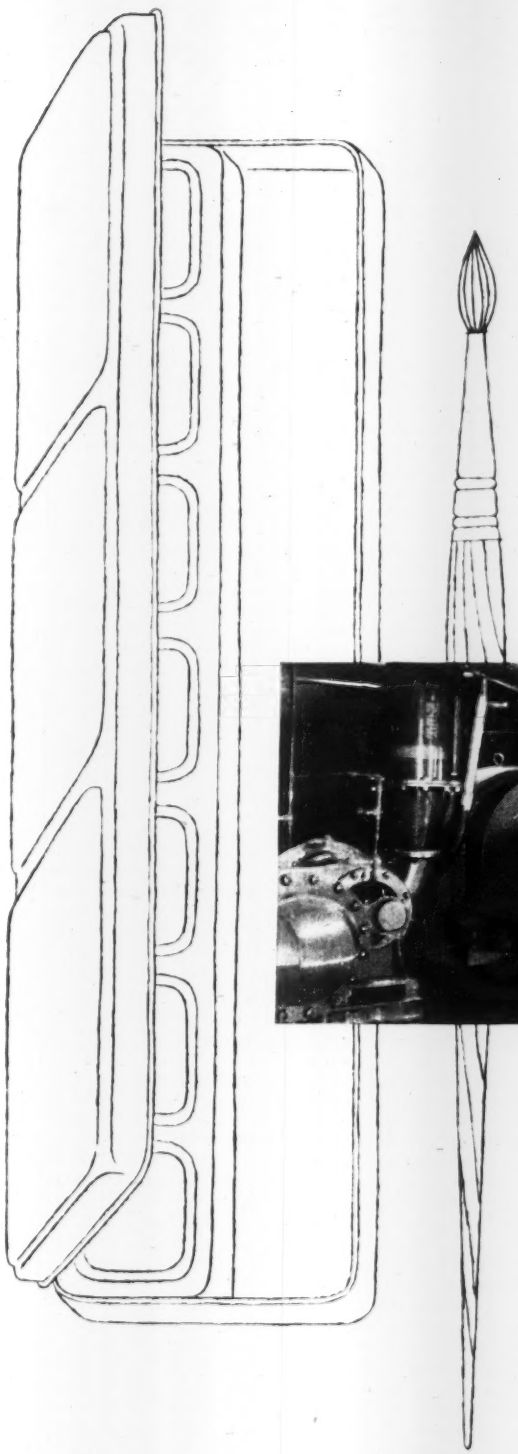
For more complete facts and technical information, write for Bulletin IE 11 to: **C. M. KEMP MFG.CO., 405 East Oliver St., Baltimore 2, Maryland.**

KEMP OF BALTIMORE

IMMERSION MELTING POTS

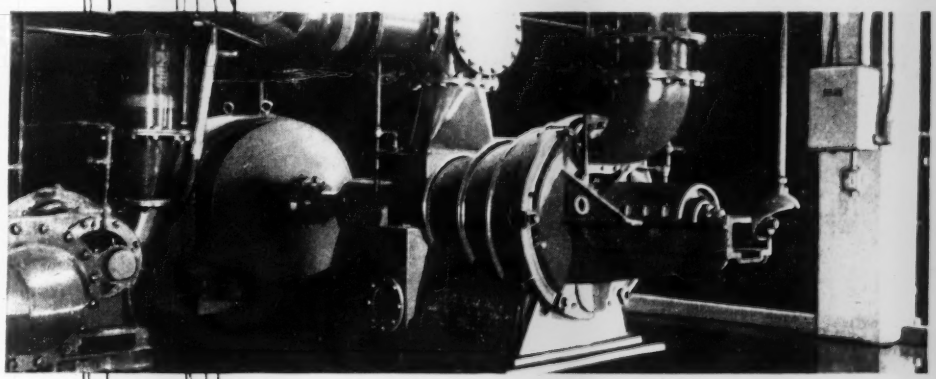
CARBURETORS • BURNERS • FIRE CHECKS
ATMOSPHERE & INERT GAS GENERATORS
ADSORPTIVE DRYERS • SINGEING EQUIPMENT

partners
in papermaking



With the distinction of having introduced cast stainless steels into the paper industry and having been a leader in the development of alloy materials required for handling sulphite and sulphate liquors or for withstanding the combination of abrasion and corrosion brought on during hydration, fibrillation and fraying of the fiber, Cooper Alloy has long enjoyed an enviable partnership with producers of pulp and paper.

And as this amazing industry continued to keep in step with the demands of an expanding population and an evergrowing industrial need, it has learned to call with confidence upon the experience and know-how of Cooper Alloy engineers, metallurgists, designers and foundrymen.



If stainless castings fit in with your equipment construction requirements or your processing needs, we would like nothing better than the chance to put our services at your disposal. For a simple, accurate story of our facilities, experience and type of thinking may we send you a free copy of our booklet "Thirty Years of Progress"?

COOPER ALLOY

THE COOPER ALLOY FOUNDRY CO. • HILLSIDE, N. J.

Los Angeles San Francisco Oakland Houston Chicago Detroit Philadelphia Hartford

Leading producers of STAINLESS STEEL valves, fittings and castings

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(Advertisement)

BRIDGEPORT BRASS COMPANY

COPPER ALLOY BULLETIN

Bridgeport BRASS CO. MILLS IN BRIDGEPORT, CONN. AND INDIANAPOLIS, IND. — IN CANADA: NORANDA COPPER AND BRASS LIMITED, MONTREAL

Exploded view of cylindrical lock, complete with key in knob, shield, escutcheon, latchbolt and screws. Courtesy Schlage Lock Company, San Francisco, California.

Brass for Modern Locks
...Chosen for Dependability and Beauty

A good door lock is expected to function regardless of age or inattention. This may explain why brass has long been the metal of choice for manufacturers of highest quality locks.

Brass has many qualifications which make it ideal for this application. It is easily worked and lends itself readily to ordinary factory operations such as machining, drawing, stamping, soldering, polishing, and plating.

Besides corrosion resistance, brass has the added advantage of a low coefficient of friction. Consequently, wear on rubbing parts is reduced to a minimum. That's why a brass lock will function smoothly with little or no lubricant.

Brass used for exterior parts such as knobs and escutcheon plates is highly decorative, with a warm, bright color, especially when highly polished. Constant use will also keep the metal shiny.

The lock illustrated is not only made from enduring brass but is exceptionally well-designed. It is of the key-in-knob type with the key in the door knob.

Originated in 1923

This lock was developed from the push button lock, a design first introduced in 1923. It is said to have changed the art and method of making door locks throughout the world. For one thing, it received ready acceptance because it required very simple installation: Only two holes in the door are needed. Thus much time and highly-skilled labor formerly consumed by mortising are eliminated. These locks are so designed that they are interchangeable once the necessary holes have been bored.

Free Machining Brass

The pin tumbler cylinder lock is a difficult part to make. This vital precision part must undergo multiple drilling, broaching, and threading, besides over-all machining. Ledrite 6 Brass Rod has a machinability rating of 100 per cent and is excellent for these operations. Ledrite also meets high standards of quality, accuracy in dimensions, and provides a smooth finish free from burrs.

The latchbolt is also made from Ledrite 6 Brass Rod. Milling and sawing are easily performed with this alloy too.

The part for the pin tumbler cylinder is made from extruded shape Ledrite 6 Free Machining Brass. This item also requires considerable drilling.

70-30 Brass for Ductility

The door knob is a two-piece assembly made from 70-30 Brass strip. This alloy is very ductile and can be readily drawn. As it must be highly polished, care is taken to supply metal with a grain size which will impart suitable ductility with maximum smoothness of surface after forming.

The decorative escutcheon plates are also made from 70-30 brass. It is supplied in the annealed condition but with the minimum grain size for the highest polish with the least effort.

Technical Service

The use of the right metals with suitable tempers is essential if economies are to be made in metal goods fabrication.

Much information on copper-base alloys, as well as numerous tables and valuable working suggestions, are found in Bridgeport's "Technical Handbook." Available on request.

Bridgeport Laboratory will be glad to help you in your metal selections. Or, contact your nearest Bridgeport Brass office for your metal requirements. (522)

CAUSES OF CORROSION

This article is one of a series of discussions by C. L. Bulow, corrosion metallurgist of the Bridgeport Brass Company.

COPPER AND BRONZES vs. SODIUM CHLORIDE SOLUTIONS

Corrosiveness of Hot Sodium Chloride Solution at 176 F

Copper and alloys of copper with aluminum, tin or silicon described in the table have essentially the same corrosion resistance towards hot sodium chloride solution. As a group, these alloys are satisfactory for many applications involving the handling of hot sodium chloride solutions even in the absence of corrosion inhibitors.

For example, some salt refineries have reported as much as 20 to 50 years life from copper equipment. Where the life has been less, the increased corrosion has been due to solution flow (impingement corrosion) against the metal surface, a high degree of turbulence, excessively high operating temperatures, or the presence of corrosive sulfides, etc.

The effect of temperature on the high copper brasses, copper and bronzes is considerably less than that shown by the high zinc brasses discussed last month.

The localized corrosion at the waterline (air-liquid junction) does not change to any degree, evidently due to the decreased solubility of oxygen in the solution offsetting the corrosion-accelerating effect of higher temperature. However, the general corrosion as shown by the rate of corrosion based on loss in weight does show some effect of temperature at the prevailing dissolved oxygen concentration. Other work indicates that in the absence of dissolved oxygen and oxidizing substances, very low rates of corrosion of copper and the high copper alloys will occur in hot or cold sodium chloride solutions. This explains their excellent performance under similiar service conditions.

Water Line Corrosion of Copper and Bronzes in Hot 2N Sodium Chloride Solution at 176 F - 9 F (249-day test)

Bronzes	Depth of Corrosion Based on Loss in Tensile Strength	Depth of Corrosion Based on Loss in Weight
100% Cu	.0064 ipy	.00491 ipy
98.7% Cu, 1.3% Sn	.0085	.00436
98.3% Cu, 1.7% Sn	.0056	.00481
95.0% Cu, 4.7% Sn, 0.3% P	.0084	.00409
98.1% Cu, 1.9% Si	.0050	.00301
97.1% Cu, 2.9% Si	.0051	.00409
96.0% Cu, 3.1% Si, 0.9% Mn	.0049	.00718
90.7% Cu, 2.1% Si, 7.2% Al	.0012	.00099
97.1% Cu, 0.4% Si, 2.5% Al	.0033	.00198
Other Material		
Low Carbon Steel (0.19% C, 0.8% Mn)	.0890 ipy	.0427 ipy
Aluminum Alloy (4.1% Cu, 0.7% Fe)	.2760	.0610

Low-cost Expendable Pallets of paper fiber material are said to be useful under many load conditions. Pallet is made of honeycomb material sandwiched between fiber board. Legs are honeycomb material and range in size from 4 to 12 in. square. Can be used with palletizing glues or with paper or metal strapping of load to pallet. **No. 1339**

Pneumatic Impact Hammer for light riveting, staking, forming, has head as separate unit to be mounted at any angle. Operates at 100-lb. line pressure at 50 strokes per cu. ft. of air, and at 60 strokes per min. with hand or foot control. Is said to be convertible to automatic operation at 120 strokes per min. Head weight 75 lbs., impact 6 tons. **No. 1340**

NEW DEVELOPMENTS

This column lists items manufactured or developed by many different sources. None of these items has been tested or is endorsed by the Bridgeport Brass Company. We will gladly refer readers to the manufacturer or other sources for further information.

Electric Metal-Cutting Handsaw uses high-alloy steel blade and is said to be able to cut 2- or 3-in. bar stock depending on size of saw used. Unit weighs 17 lbs., and is powered by ¼-hp motor operating on 110/220-v, dc or ac. Model operating on air pressure also available. **No. 1333**

Coolant Clarifier is said to remove all chips, abrasives and other solid contaminants from both water-based and mineral oil coolants. Unit can be used with individual machine tools or with small central systems. Filtering tubes are said to be washed free of contaminants during backwash period and require no manual cleaning. Operation can be continuous or intermittent. **No. 1334**

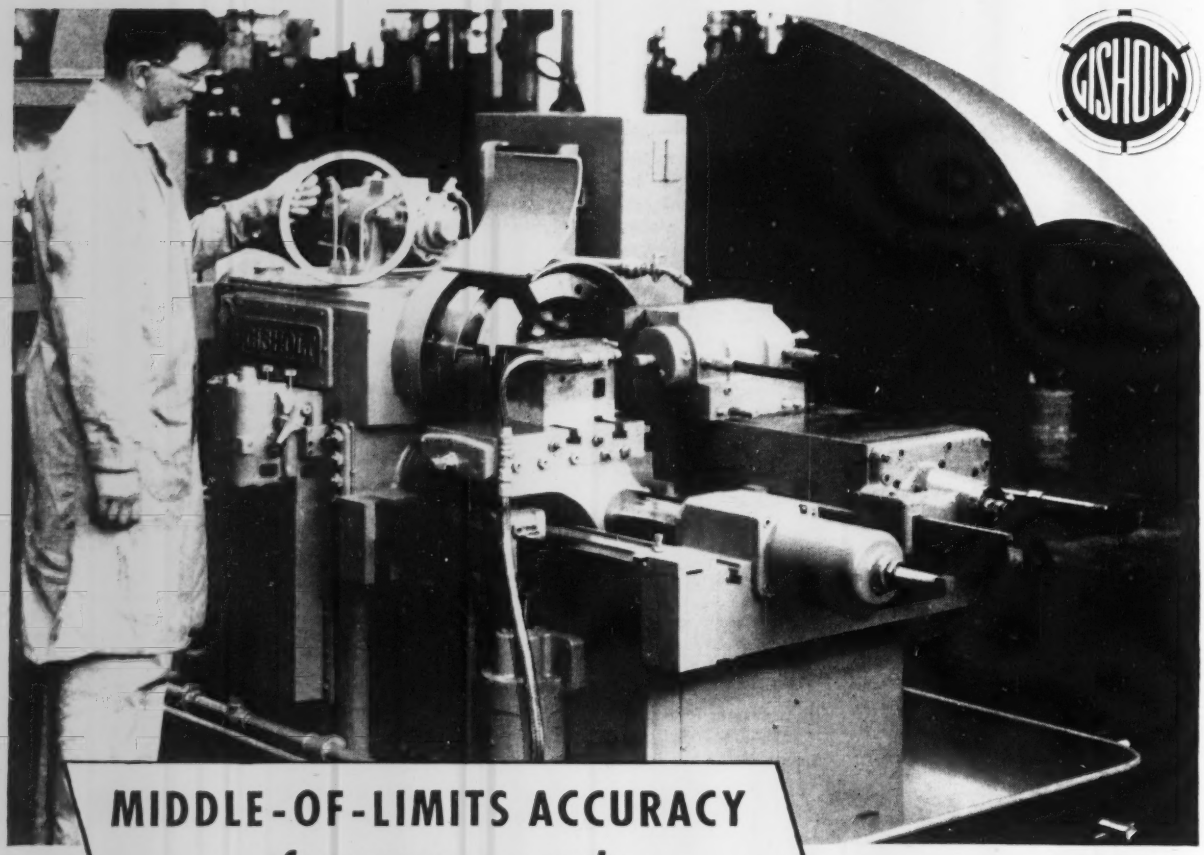
Vernier Caliper of stainless steel is reported to measure inside and outside as well as depth. Slide has self-lubricating bronze gib, and gage is equipped with adjusting screws to assure squareness of measuring jaws. Three scales and vernier read thousandths on the lower front, 1/128th-in. divisions and fractions on upper front, and 0.1 mm. on the back. Measuring surfaces are lapped. **No. 1335**

Portable Strapping Kit weighing 17 pounds can be carried from job to job in plants. Contains 300-ft. steel strapping coil in cardboard dispenser, 1000 seals, stretcher, sealer, and snips. **No. 1336**

Centerless Grinder is reported to handle 1/16 to 1-in. diam. straight or contour work. Is said to hold tolerances as fine as 0.0003 consistently and to give low micro-inch finishes easily. Range of 30-480 rpm of regulating wheel spindle is provided by infinitely variable gearless drive. Large sizing dial permits setting in tenths and provision is made for mounting 0.0001 indicator. **No. 1337**

Industrial Fluoroscope for mass inspection of castings and sealed assemblies operates from 110-v 60-cycle source. Has 9 x 19-in. front opening through which products are inserted for viewing. Is said to detect internal cavities 0.040-in. in size. Single external control handle permits parts to be moved in any direction while under x-ray beam. **No. 1338**

BRASS, BRONZE, COPPER, DURONZE, NICKEL SILVER, CUPRO NICKEL
BRIDGEPORT BRASS
BRIDGEPORT BRASS COMPANY, BRIDGEPORT 2, CONN. • ESTABLISHED 1865
Mills at Bridgeport, Connecticut, and Indianapolis, Indiana • In Canada: Noranda Copper and Brass Limited, Montreal
Warehouse Service with Slitting Facilities in Principal Cities
(Advertisement)



MIDDLE-OF-LIMITS ACCURACY

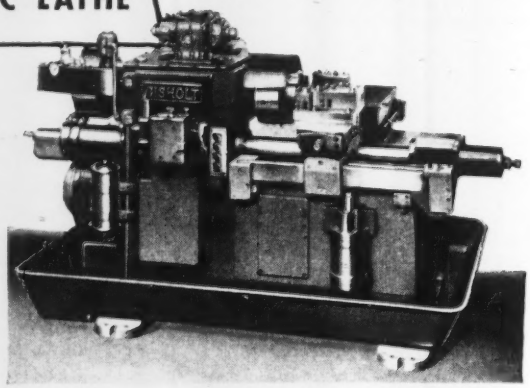
for years on end

NO. 12 HYDRAULIC AUTOMATIC LATHE

Loss of accuracy due to wearing parts? You won't get it with this modern automatic lathe—even after years of hard service. There are no complicated mechanisms to wear—it's that simple!

All parts having to do with tool movement are completely surrounded by oil and lubricated under pressure. Both carriages move on hardened and ground steel surfaces. For all practical purposes, there is no wear-out. Since both front and rear tool slides feed against and dwell at positive dead stops, utmost accuracy is assured in finished dimensions.

Yes, you can count upon middle-of-limits accuracy for many years to come. What's more: you can count upon trouble-free operation that cuts maintenance bills to almost nothing. Write for literature.



THE GISHOLT NO. 12 HYDRAULIC AUTOMATIC LATHE **is a heavy, rugged machine, yet well suited for light, fast jobs.**

GISHOLT

MACHINE COMPANY

Madison 10, Wisconsin

THE GISHOLT ROUND TABLE

represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.

TURRET LATHES • AUTOMATIC LATHES • SUPERFINISHERS • BALANCERS • SPECIAL MACHINES

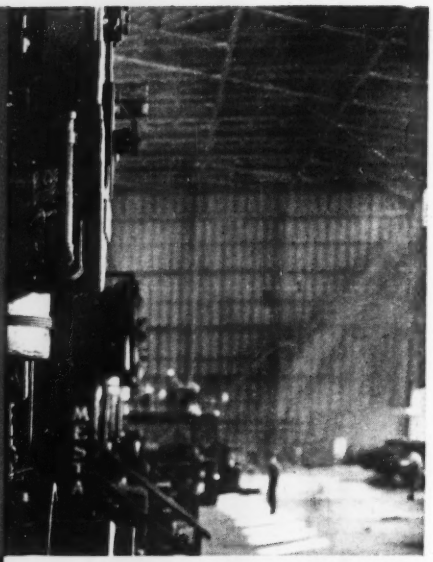
STAINLESS STEEL KITCHENWARE

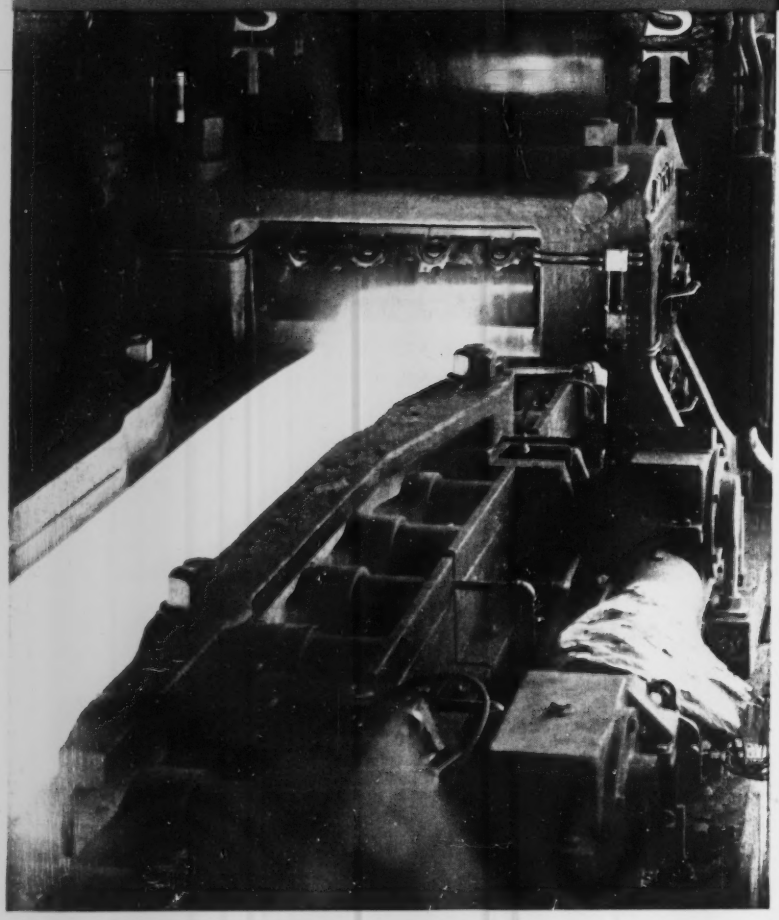
McLouth STAINLESS Steel

For the product you make today and the product you plan for tomorrow.

McLouth Steel Corporation
DETROIT, MICHIGAN
Manufacturers of Stainless and Carbon Steels

SAVE A MILL A POUND... EARN AN EXTRA $2 A TON





A saving of only a mill per pound on the cost of rolling steel, adds up to an extra profit of $2.00 per ton. One way you can make this saving is to see that your equipment runs without unnecessary interruptions or slowdowns. And here Texaco can help you greatly.

First of all, Texaco has *a complete line* of steel mill lubricants . . . designed to assure you smooth, uninterrupted operation . . . longer life for all your machinery and equipment . . . lower maintenance costs.

Then there is Texaco Lubrication Engineering Service rendered by men trained and experienced in steel mill operations . . . men qualified to help you in many cost-saving ways beyond the mere recommendation of lubricants.

Let us show you how you'll benefit by teaming up with Texaco. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

TEXACO Lubricants, Fuels and Lubrication Engineering Service

STEEL
October 5, 1953

Metalworking Outlook

Setting a Pattern

Steel consumers may find their steel costs going down somewhat as a result of U. S. Steel Corp.'s announcement that it will absorb freight "when necessary and commercially desirable in order to participate in the business of an individual customer." Although a few small steel producers never abandoned the absorption of freight, the general policy since a 1948 court decision has been to let the customer pay the freight charges. With competition returning to the steel business and with the government's changed attitude on industry's pricing policies, U. S. Steel took the initiative and announced it would absorb freight costs where necessary. This sets a pattern for the whole steel industry.

Freight Absorption Law?

Some leading government lawyers believe that new laws affecting freight absorption are unnecessary, that recent court decisions and Federal Trade Commission comments on the matter clarify the issue sufficiently. Congress has long been reluctant to get involved in the thorny question of absorption, despite the interest of a few legislators such as Sen. Homer Capehart (Rep., Ind.). Some observers fear that the majority in Congress will be happy to take the lawyers' advice and continue in the next session to leave the problem strictly alone.

FTC Goes Republican

For the present, the Federal Trade Commission views on freight absorption and other subjects do parallel those of industry. The similarity promises to be even closer now that the Republicans have a clear 3-2 majority on the commission with the swearing in of Republican John W. Gwynne to succeed Democrat Stephen J. Spingarn, whose term ended. Republicans Gwynne, Edward F. Howrey and Lowell Mason also expect to be supported frequently in their positions by Democrat Albert A. Carretta. Democrat James M. Mead may end up as the lone dissenter on many issues coming up.

Railroads Study L.C.L.

Watch for a new policy by the railroads on handling less-than-carload freight. Association of American Railroads has set up a new research group to explore all phases of l.c.l. traffic. The group is headed by G. H. Hille of the Pennsylvania Railroad and began its studies Oct. 1 in Chicago.

What's Cooking in 1954?

What will be the big political issues in 1954? *Congressional Quarterly News Features* in a survey of Congressmen reports that Republicans consider the Korean situation, economy in government, tax reduction and budget balancing as the most crucial, in that order. Democrats consider the order of importance to be: The Korean situation, tax reduction, livestock prices and farm price supports.

$40 Billion for Defense

Defense department spending in fiscal 1955 will be about $40 billion, some $2 billion less than in fiscal 1954. The new military appropriation request

Technical Outlook—p. 87 The Market Outlook—p. 141

Metalworking Outlook

for fiscal 1955 will probably be about the same amount that Congress voted for the current fiscal year—$34.5 billion.

The 1953 Wage Hike: 6.97 Cents

The weighted average increase in hourly wages granted to workers by all industry will be 6.97 cents in 1953. That figure, calculated by Associated Industries of Cleveland, actually applies to the Cleveland area only, but many labor experts say it's a good national average since the city has such a diversity of manufacture, both in size and type. Common fringe concessions granted this year have been three-week vacations for 15 years' service, paid Saturday holidays and minor revisions in insurance programs. Fringe costs add up to 1 or 1.5 cents per hour in added wage costs.

Michigan Needs Steel Capacity

Two-thirds of the steel used in Michigan is produced in other states, according to the Michigan Economic Development Commission in a report on opportunities for steel development in the Wolverine state. While Michigan produces a large share of its cold-rolled sheet requirements, its output of other products used in large quantities for autos is substantially below needs of the area. The report indicates that the best marketing opportunity for new steel capacity in Michigan is for bar and wire products.

U. S. Power Price To Rise

Look for the cost of power marketed by the government to rise. Assistant Secretary of Interior Fred G. Aandahl indicates that the increase will be gradual over the next five years. Already there are reports that Bonneville Power Administration will hike its rates to as much as $22.50 a kilowatt year, compared with the present $17.50 level.

Straws in the Wind

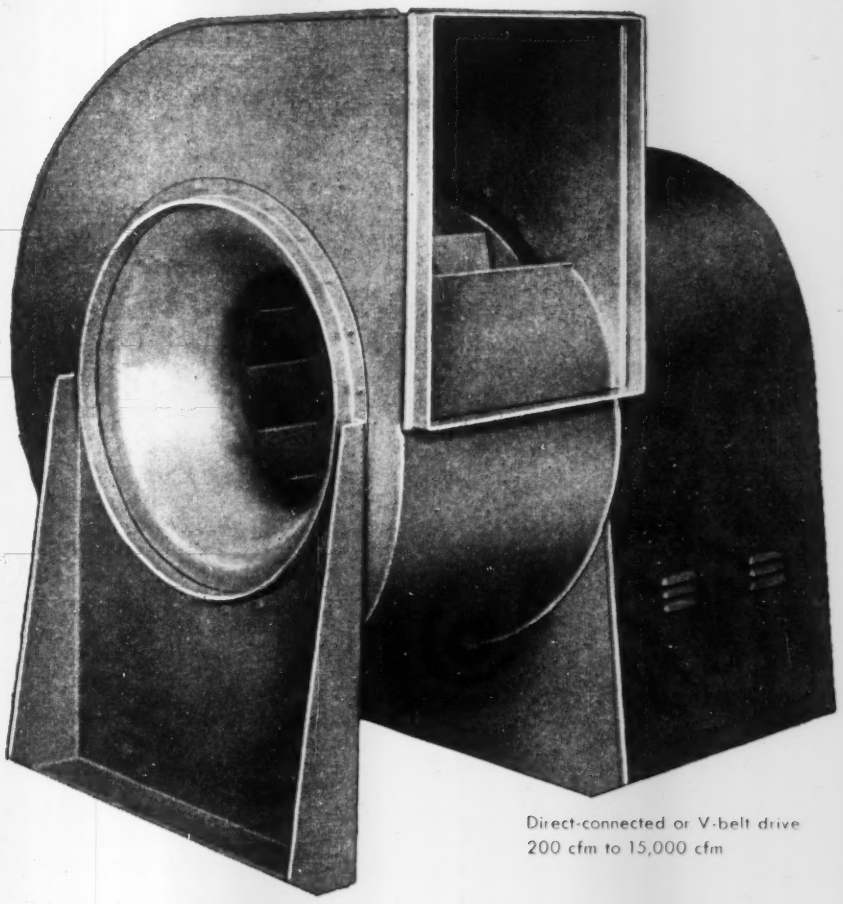
The wage policy committee of the United Steelworkers will meet Oct. 21-23 in New York . . . Now that President Eisenhower has virtually killed the possibility of a national sales tax, the Treasury is giving renewed study to a manufacturer's tax . . . NPA Order M-103 on controls for diamond grinding wheels has been revoked . . . Some of the money saved in recent Air Force cutbacks is going into increased production of latest type jet planes—the B-52 bomber and F-100 fighter . . . The U. S. will pay part of the bill for some $1 billion worth of arms to be produced in Europe by NATO countries . . . General Motors has acquired all the outstanding stock of Euclid Road Machinery Co. and will operate it as a wholly-owned subsidiary. Present company management will continue.

This Week in Metalworking

Despite a slight seasonal rise in stocks of industrial components, a mild inventory shakeout continues (p. 47) . . . Metalworking prices may climb a little in the next six months, then return to present levels next spring (p. 49) . . . Labor will seek greater union security rather than more wages in 1954, predict speakers at an American Management Association conference (p. 50) . . . Latest plans for a New England steel plant involve electric facilities (p. 50) . . . Air conditioning may eventually become a $5-billion industry (p. 51) . . . An American observer gives a rundown on European machine tool developments (p. 52) . . . The government is submitting to industry its proposed marking system to identify metals (p. 53) . . . New ideas are coming up on pension and insurance (p. 58).

NEW!

ALL-PURPOSE VENTILATING SETS YOU CAN PUT INTO SERVICE FAST!



Direct-connected or V-belt drive
200 cfm to 15,000 cfm

Here's a new line of Westinghouse motor-driven ventilating sets. They are ideal for general purpose ventilation, for exhaust, for processes, and for removal of heat, fumes and vapor.

Where changing plant or building conditions create an unexpected need for ventilation, these sets are a quick solution. Here's why:

COMPACT SIZES—down to 10" x 12" x 16"—take little space, are easy to install.

SINGLE UNIT—fan, motor and drive all made and assembled by Westinghouse.

DIRECTION OF DISCHARGE—can be changed on the job.

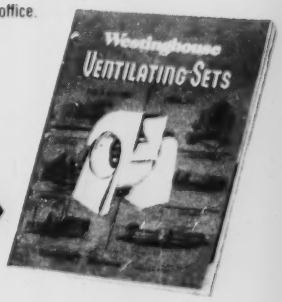
LOW MAINTENANCE permits use of out-of-the-way locations.

WEATHERPROOF COVERS permit outside installation.

SHORT DELIVERIES get your job started sooner.

These ventilating sets are low in first cost, low in operating cost. You get a single warranty because fan and motor are both built by Westinghouse.

For other exclusive features and full information, ask for Catalog 1160. Call your local Westinghouse-Sturtevant office. Or, write Westinghouse Electric Corporation, Sturtevant Division, Hyde Park 36, Massachusetts.



WESTINGHOUSE AIR HANDLING

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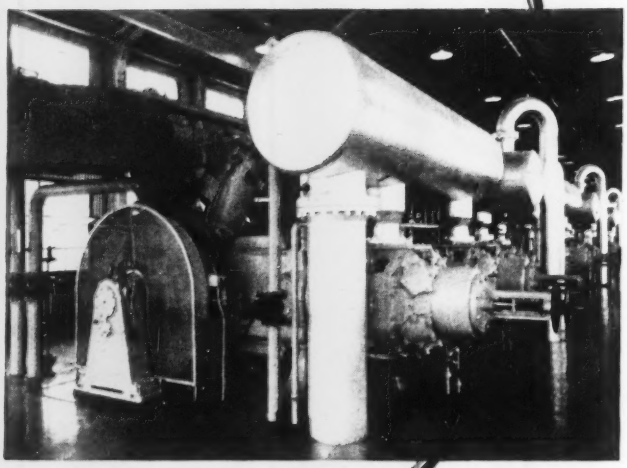
YOU CAN BE SURE ... IF IT'S Westinghouse

ARMCO 17-4 PH Helps Deliver The Gas



This large hoop is a vital part of a large gas compressor. As a piston ring expander it must exert continuous pressure on the piston ring. The ring is made of Armco 17-4 PH, a new precipitation-hardening stainless steel.

HARDENED WITHOUT DISTORTION

Armco 17-4 PH requires only a single low-temperature heat treatment at 850-900 degrees F. There is no distortion, cracking or scaling — only a light heat tint. Yet the heat treatment develops a minimum tensile strength of 180,000 psi and minimum yield strength of 165,000 psi.

TWO PRECIPITATION-HARDENING GRADES

Armco 17-4 PH is produced in bars and wire. Another precipitation-hardening stainless steel, made in sheets, strip, plates, bars and wire, is known as Armco 17-7 PH. Depending upon condition, this grade is hardened by a single or double low-temperature heat treatment.

HIGH STRENGTH PLUS CORROSION RESISTANCE

Both precipitation-hardening stainless steels develop yield strengths higher than Types 301, 403, 410, 414, 416 and 431, with equal or higher tensile strengths. Yield strengths in compression are equal to or higher than those in tension. Corrosion resistance of both grades is generally better than that of the standard hardenable types.

If you want the latest information and test data on these remarkable stainless steel grades, write for the bulletin, "Armco Precipitation-Hardening Stainless Steels."

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ARMCO

We Can't Have Everything

Speaking in Boston two weeks ago, President Eisenhower said: "We know the enemies of freedom to be equipped with the most terrible weapons of destruction. We know, then, that we can meet them with only one answer: There is no sacrifice—no labor, no tax, no service—too hard for us to bear to support a logical and necessary defense for our freedom."

This statement immediately aroused concern. Was the President trying to warn the people that Russia's possession of the H-bomb means that we have got to resign ourselves to continued high or higher taxes, prolonged deficit spending and recurring, grave national crises? Partial reassurance came the next day when Secretary of the Treasury Humphrey told members of the American Bankers Association that the administration will go through with its commitment to allow the 1950 excess profits tax to expire next Jan. 1, along with the 1951 increase of more than 10 per cent for many individual income tax payers.

Some tax experts figure that these promised tax reductions, coupled with contemplated expenditures, will result in a deficit for the fiscal year ending June 30, 1954, of something short of $4 billion. Looking forward to the fiscal year ending June 30, 1955, they envision a deficit of around $9 billion.

Last Wednesday the President told reporters at a press conference that he would not ask Congress for a retail sales tax, but he did not rule out the possibility of a general tax on manufactures. He also declared he will not call back Congress into special session to raise the ceiling on the national debt unless a radical change occurs in the government's financial situation.

This roundup indicates that in spite of its desperate efforts to effect economies in government, the Eisenhower administration finds itself in a difficult financial position. If to these complications now must be added new expenditures for H-bomb defense, the problem of the national budget becomes extremely serious.

This time, if we must spend more to defend freedom we certainly must cut down on less important government activities. We can't afford the luxury of having everything that anybody wants.

E. C. Shaner

EDITOR-IN-CHIEF

LESSON IS EXPENSIVE: An Associated Press dispatch from Tehran states that the new government of Premier Zahedi told the Iranian people that since May, 1951, when former premier Mossadegh nationalized the oil industry, the business has run $87,349,846 in the

red, has become saddled with millions of dollars of worn-out equipment and now requires the services of foreign experts to rehabilitate the properties.

Underlying this sad state of affairs in Iran was the refusal of Mossadegh to heed the lesson experience has taught in so many instances, namely, that there is no substitute for managerial skill. A recent classic illustration was the plight of China, Manchuria, Korea and Formosa after V-J Day. For years Japanese had pre-empted every executive position above that of foreman for Japanese personnel. The local natives were assigned to lesser jobs. When the war ended and the Japs fled there was almost a complete absence of competent managerial skill.

This is something to remember when we are considering Point Four assistance for backward nations.

* * *

WHY HE'S PESSIMISTIC: United States Steel's Chairman Benjamin F. Fairless delivered one of the best speeches of his career to members of the Economic Club of Detroit a few days ago. He was particularly effective when he argued that the decline in the steelworks operating rate from over 100 per cent to 90 plus per cent does not mean that the national economy is headed for disaster.

He said that people who are alarmed by this trend are a lot like the restaurant owner who was complaining to a customer about how terrible his business was. The customer was surprised. "Why look, Joe," he said, "every table in the place is filled and I've seen you turn away at least a dozen people while I've been sitting here." "Yes, I know," said the gloomy proprietor, "but six months ago I was turning away three dozen."

This pat story illustrates the extent to which an extended inflationary sellers' market has affected the reasoning of some businessmen.

* * *

AGAIN, COMMON SENSE: Joe's inclination to judge the pulse of business by the number of the would-be customers he turns away is indicative of the manner in which many of us have been "spoiled" by an excess of easily obtained business over an extended period of years. Under these lush conditions it has been easy to assume that a feverish, inflated, crazy pace of business is normal.

Providentially, we may now have an opportunity to release ourselves from the rigors of this reckless pace, which in reality is neither normal nor wholesome. We may find that operating at 90 per cent of capacity is much preferable to straining to achieve a rate of 105 per cent. Workers who have been gathering time and a half and double time for week-end overtime and being absent one or two days at regular rates may really welcome a more moderate working schedule.

A return to a sensible pace of business will be beneficial to all concerned.

* * *

MUCH SMOOTHER RIDE: Hundreds of suburbanites in a midwestern city ride from their downtown offices to their homes in rapid transit cars which recently have been running over a roadbed that is changing daily. The old roadbed consisted of the orthodox 39-foot rails with bolted rail joints. The new roadbed, which increases a quarter or a third mile every day, consists of continuous thermit welded rail.

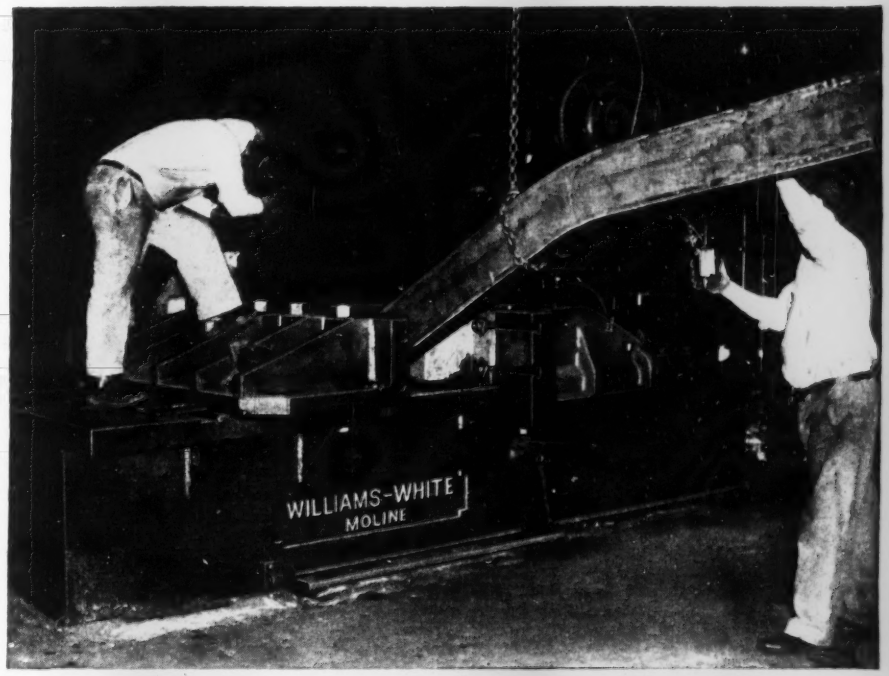
This last week the ride over the continuous rail has been so smooth and noiseless that the shift to the bolted rail is violently noticeable. We wondered whether this local rapid transit shift to welded rail was unusual. In consulting "Modern Railroads," we find that continuous welded rail is being adopted more and more by many Class I railroads.

* * *

FOR BETTER HIGHWAYS: Last week General Motors unveiled an extra-long flat freight car which is designed to accommodate two major-size highway trailers. The objective is to provide a service whereby the truckers of the nation can place their vehicles on railroad cars for long hauls, thus relieving congestion on the nation's highways.

The GM promotion is effective in that it provides for two trailers on a single car. However, it is confronted by the competition of several railroads which already have inaugurated trailer transport by rail. This phase of transportation is in its infancy. The opportunity now presented to railroads in some territories to work with the truckers to reduce congestion on highways is something that no interested party should dismiss lightly.

Bending Heavy Beams is light work for a WILLIAMS-WHITE HYDRAULIC BULLDOZER



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A "BULLDOZER" FOR EVERY BENDING, FORGING, FORMING JOB

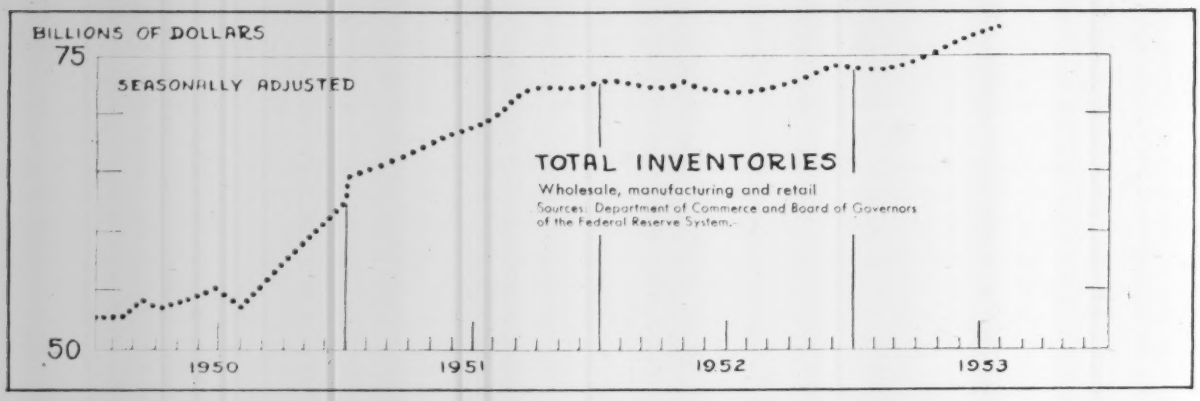
Since it was first introduced by WILLIAMS-WHITE & CO. in 1880, the Bulldozer has become one of the most useful machines in industry. A multitude of jobs, in farm equipment plants, airplane factories, railroad shops and ship yards, are being done today on modern versions of the original mechanical Bulldozer. The Hydraulic Bulldozer, one type of which is shown above, can be built to meet your requirements. Write direct or contact our representative nearest you.

ESTABLISHED IN 1854

MAKERS OF QUALITY PRODUCTION MACHINERY FOR NEARLY 100 YEARS

WILLIAMS-WHITE & CO.

MOLINE, ILLINOIS



Economists caution:

Cut your Inventories...

...and here is a practical way!

While deliveries are still slow on a few steel products, most types and shapes are in good supply. And every day brings more evidence that a free and easy market for all steel products is not far away.

This situation obviously calls for a closer watch on steel inventories. However, steel demand has outrun supply for so long that a clear statement of the alternatives may be in order.

With inventories high there's always the chance that a change in business conditions or in manufacturing requirements may result in an overstock that can only be liquidated at a loss. But when you keep your inventories at a conservative level, supplementing them, as needed, from warehouse stocks, you avoid this risk of loss and free extra capital for other work, as well.

The Ryerson organization is particularly well equipped to help you follow a conservative steel buying policy. Ryerson stocks have been steadily improving—both as to available sizes and total tonnage. And these stocks are strategically located in fifteen plants for quick delivery to any area.

Carbon, alloy, stainless steel—whatever you require awaits your call at Ryerson. So we suggest that you check your steel stocks now and keep in touch with your nearby Ryerson plant for quality steel to meet your current needs.

PRINCIPAL PRODUCTS IN STOCK

CARBON STEEL BARS—Hot rolled and cold finished
STRUCTURALS—Channels, angles, beams, etc.
PLATES—Many types including Inland 4-Way Safety Plate
SHEETS—Hot and cold rolled, many types and coatings
TUBING—Seamless and welded, mechanical and boiler tubes
ALLOYS—Hot rolled, cold finished, heat treated. Also tool steel
STAINLESS—Stainless bars, plates, sheets, tubes, etc.
BABBITT—Five types, also Ryertex plastic bearings

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC., PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND • DETROIT
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Buyers' Market Prevails

Further improvement in inventories and deliveries in next three months expected by 98 per cent of components users. Ideal situation near at hand

COMPONENT INVENTORIES are showing a seasonal rise. With the usual autumn upturn in business materializing, purchasing agents have enlarged stocks of most components to a level slightly above that prevailing at mid-year.

This inventory expansion has been accomplished with ease, for component deliveries are faster now than in June. Yet, buyers have been careful and selective in increasing their stocks.

STEEL's quarterly survey reveals a small inventory gain for 12 components. The rolling inventory readjustment continues for the other 9 items. Net effect of the readjustment trend is that deliveries are faster for 15 parts. Only 6 are slower.

In line with the generally faster deliveries, only 52 per cent of the respondents say that they are sold as much now as a year ago on the basis of delivery dates. Need for delivery by a specified date has declined 7 per cent since the last survey.

Greater availability of parts along with a careful appraisal of business prospects has made for a better inventory situation. The stock condition is considerably improved over a year ago, say 95 per cent of the survey's participants.

Outlook — Further improvement of the inventory picture is expected during the next three months by 98 per cent of the respondents.

Right in line with the anticipated improvement is the ideal inventory position. Purchasing agents think that the ideal position for most products is within the 30 to 60 day bracket. Since average inventories are already within this period, the expected improvement should take inventories close to the ideal position.

It is significant that several purchasing agents believe the present stock position to be the ideal. They expressed such an opinion in their replies. But whether your company has reached the ideal position or not, your feelings about inventories are probably contained in the exclamation "much more satisfying to answer the survey now" a phrase coined by one of our respondents.

Hard to Get—While it is more satisfying to be able to get the components you want easily, there are still several hard to obtain items. Though deliveries on antifriction bearings are improved, high automobile production is keeping the demand up. These bearings are listed by many buyers as giving the most trouble on inventory and delivery and present stocks are lower than three months ago.

Second most difficult to handle are gears. In this case, deliveries take longer even though inventories are larger.

Steel castings also give considerable trouble to purchasing agents. But the situation in both inventories and deliveries has improved over the situation during last quarter.

Inventory Changes—Among the components with larger inventories are all castings, hose couplings, electrical equipment, fasteners, forgings, gears, mechanical rubber and screw machine products. Stocks of all but four of these parts show a gradual expansion. Hose couplings and mechanical rubber goods, however, have increased rapidly with the result that average holdings are in a higher bracket. Inventories of die and nonferrous castings show a tendency to increase at a fast pace. Typical holdings for these products have advanced to the next group.

Delivery Picture — Parts being shipped faster are antifriction bearings, belting, all castings, hose couplings, electric motors, fasteners, screw machine products, stampings and springs and wire shapes. Four of these items receive considerably faster deliveries. They are: Antifriction bearings, electric motors, both fractional and over 5 hp, and springs and wire shapes. A ten-

dency for slower deliveries is noted in shipments of belting, die and malleable castings and screw machine products. Typical holdings for these items are in a slower category, even though the general trend is faster.

No Unusual Sources—The generally faster deliveries and the tapering off of the business pace from the spring level has removed the need for irregular sources of supply. Not one of the survey's participants now buys from foreign producers or special sources.

Latest Components Picture as Seen by STEEL's Quarterly Survey

(Figures are percentages of those replying to the questionnaire)

COMPONENTS	INVENTORY POSITION					BEST DELIVERY				
	Under 10 days	10-30 days	30-60 days	60-90 days	3-6 mos.	Under 10 days	10-30 days	30-60 days	60-90 days	3-6 mos.
Antifriction bearings (This quarter)	11	20	49	4	16	21	29	33	10	7
(Last quarter)	3	24	38	28	7	11	30	26	18	15
Belting, belt drives	12	41	41		6	41	53	6		
	9	43	35	13		50	29	21		
Castings, die		21	37	12		4	14	59	18	5
		23	53	24			40	27	33	
Castings, gray iron	9	29	40	20	2	20	59	19	2	
	3	30	54	13		3	66	24	7	
Castings, malleable		15	50	35		5	25	55	15	
	4	16	64	16			42	37	17	4
Castings, nonferrous	16	20	48	12	4	16	52	20	12	
	7	40	33	20		14	43	36	7	
Castings, steel	4	12	60	12	12	4	24	48	12	12
	5	32	37	26		6	22	44	11	17
Couplings, hose	12	35	24	23	6	38	25	37		
	9	46	36	9		25	34	33	8	
Cylinders, air, hydraulic	23	16	23	23	15	15	15	39	23	8
		36	37	18	9	25	38	37		
Electrical equipment	7	29	32	16	16	13	23	47	17	
	19	25	44	12		13	50	31	6	
Electric motors (fractional)	24	12	52	8	4	22	39	30	9	
	11	22	39	28		19	25	44	6	6
Electric motors (1-5 hp)	30	30	25	10	5	28	50	17	5	
	19	44	12	19	6	24	35	29	6	6
Electric motors (over 5 hp)	22	44	28	6		29	35	24	12	
	25	42	17		16	8	38	31	15	8
Fasteners	2	22	45	24	7	14	41	40	5	
		23	51	20	6	10	42	39	9	
Forgings	4	16	48	20	12		22	37	19	22
	4	28	40	24	4		20	40	28	12
Gears	7	17	28	27	21	8	7	41	22	22
	10	25	25	30	10	5	32	26	32	5
Rubber goods, mechanical	8	31	46	11	4	21	21	42	16	
	8	44	32	12	4	13	43	35	9	
Screw machine products	2	23	34	34	7	7	34	36	23	
	3	24	39	24	10	3	40	34	18	5
Springs, wire shapes	4	17	34	38	7	2	49	31	16	2
		15	46	30	9	3	39	42	16	
Stampings	7	22	50	21		13	21	50	4	12
		24	57	19		5	16	47	21	11
Weldments	18	18	55	9		10	30	50	10	
		30	60	10		22	34	22	22	

Prices: Small Rise Will Be Ironed Out

Some metalworking prices may rise yet in 1953. But increased competition, productivity and fewer wage hikes will help bring them back by next spring to present levels

METALWORKING prices have reached a plateau.

The pressure to boost prices is still there all right, but increasing competition in metalworking markets will force manufacturers to look hard for other ways out.

Look Ahead—Chances are metalworking price indexes will show slightly convex curves through the latter part of 1953 and first quarter, 1954. By the end of that period, though, watch for the trend line to flatten out.

Prices won't come down much because profit margins are described now as running between "satisfactory" to "not enough, but what can we do?" The big pitch will be to sell the idea of "More Product for the Same Money," instead of shaving prices.

Getting Particular—Home appliance prices, after taking a jump in the Bureau of Labor Statistics' wholesale price index for June, leveled off in August. A month before the latest rise, in May, 1953, the price index stood at the same place it was in June, 1951—108.1. Price increases came on more expensive, de luxe models, not at all on less expensive, slower moving items. As one appliance supply company manager put it: "We don't want to price ourselves out of the market. Generally in appliances, business has been good this year, and there is no reason to cut prices. Items moving more briskly can take a slight increase in price."

Chain of Events — Transmission and sprocket chain prices advanced approximately 6 per cent early this year and have held there since. Manufacturers would like to advance prices to meet additional costs but won't in the near future unless costs rise sharply again.

Prices on screw machine products have increased from 30 to 50 per cent from 1948, depending upon the materials used. However, some manufacturers raised the ante on screw machine products only 2 per cent after the last steel price revisions. Outlook is for stable market pricewise for several months.

Standard gear prices moved upward 7 to 8 per cent following this summer's steel price increases and may possibly move higher depending on the outcome of current labor demands. Price rises will be used only as a last resort, however.

Fastened to a Price—Bolt, nut and rivet prices have gone up about 15 per cent since the end of OPS, latest hike coming this summer after the steel rises, but further important increases are beyond the foreseeable future.

Auto purchasers will be getting more for their money in 1954 with new model engines, color-matched interiors, etc. Actually, prices have in effect declined somewhat in 1953 as dealers began giving discounts for cash, overallowances on used car trade-ins. Price tags may even be reduced a bit, as in Chrysler Corp.'s 1953 cut and the slight price decrease expected on new model Hudsons. But, generally the story will be "more for the money."

Comes Out—STEEL quizzed manufacturers in many other segments of industry—office equipment, precision instruments, valves, pipe and pipe fittings, steel mill equipment and others—but the story comes out much the same as those illustrated above. Manufacturers are prepared to make the goal line stand on prices, though they may still have to give a little ground.

Labor holds the key to what price increases do come along. Even the oft-mentioned steel price increases, which caused many producers to revise price tags upward, sprang originally from wage increases. Fortunately, labor's wage demands are expected to moderate next year (see STEEL's Management Series article on Labor, Sept. 7, p. 101 and p. 50, this issue).

Manufacturers are sorting ways and means of fighting price increases. Machinery & Allied Products Institute says machinery and equipment makers have done a good job through increased productivity (see STEEL, Sept. 28, p. 51). Other manufacturers are sharpening up buying practices and re-examining transportation methods. Most important, metalworking management will keep closer watch on further wage and fringe demands.

Freight Absorption on Steel: It's Here

REFLECTING increasing competition in steel, U. S. Steel Corp. revised its sales policy last week so as to permit absorption of freight in meeting a lower delivered price of a competitor, "when necessary and commercially desirable in order to participate in the business of an individual customer."

Price Policies—B. F. Fairless, chairman, in announcing the policy change, said U. S. Steel will continue to quote prices f.o.b. its mills, or, if the customer so desires, delivered prices which reflect full transportation charges from shipping point to destination. In addition, he stated, the revised policy will allow the meeting of a lower delivered price of a competitor in certain conditions.

He emphasized, though, that the revised policy does not constitute a return to the so-called multiple basing point method of selling which was abandoned in 1948.

This change in policy, coming as it does from the leading producer, is particularly significant. Some sellers for some time have been absorbing freight under certain conditions, but the policy has not been widespread among producers.

Setting a Pattern—Until now, at least, there has been a disposition among some of the large mills to await the passage of some clarifying act by Congress. U. S. Steel has been regarded as a leader who might await such action. But apparently now this interest does not think waiting is necessary, and it appears highly likely that this change in sales policy will influence most if not all others who have not already taken such action—that is, if they feel the urge or necessity of competing as undoubtedly they will.

What's Ahead for Labor Demands?

Consensus of speakers at American Management Association's personnel conference is that management's ready to push for a fair day's work, less friction on productivity gains

DIRECT wage demands will be subjugated to pressure for individual and union security in the next round of collective bargaining. Nineteen fifty-four may be a zero round for direct wage gains.

Management will bring counter demands for a fair day's work and for removal of union-imposed restrictions on productivity resulting from technological advances.

Next Objective—The guaranteed annual wage is the next big objective of organized labor. But neither labor nor management yet knows how that issue can be resolved.

The long-term labor contract is losing favor with management. The promised benefits have not materialized and management believes it is long-term for management only and is still short-term for labor. The unions are not too sure they want more long-term contracts, either.

Those are appraisals voiced by industrial relations men attending the American Management Association's personnel conference in New York Sept. 28-29.

Bargaining in Downtrend — Industry men generally believe economic conditions will preclude direct money wage increases in the next round. They believe a combination of government withdrawal from the bargaining table and a slackening in the pressure for production will slow down the wage-price increases merry-go-round.

While the unions do not yet openly admit this, they are talking and planning in terms of security—for the individual and for the union.

John J. Dillon, an educational director for United Automobile Workers-CIO, says that while labor will continue to look forward to increasing labor's share of the national output, that aim can be accomplished by decreasing prices as well as increasing wages.

Watch Annual Wage—Mr. Dillon wants management men to think seriously about the guaranteed annual wage demand. Steelworkers will press for the annual wage in 1954 and the auto workers will insist on it in 1955. No one, Mr. Dillon admits, knows very much about the guaranteed annual wage program yet. The unions have been studying it for several years, and "we don't have all the answers."

U. S. Steel

LABOR PAUSES
what will be wanted next?

Actually, the unions are not interested in the guaranteed wage as such, says Mr. Dillon. If other means can be found to regularize production and employment there would be little need for a guaranteed wage.

What Term Contracts? — Long-term collective bargaining agreements have not lived up to expectations, says Campbell W. Elliott, director of industrial relations for Minneapolis-Moline Co., Minneapolis.

T-H Changes Unnecessary—Consensus of the management men is that revision of the Taft-Hartley law at this time is not necessary. Many believe that it should not be tampered with at this time, either to put more teeth into the act or to pull them out.

Concurring with this view is David L. Cole, former director of the Federal Mediation & Conciliation Service.

"No change should be made now in the act," says Mr. Cole. "The change should come in the administration of the law."

New England Steelmaker?

Electric-mill proposal spurs new hopes for a steel plant in the area

NEW BLOOD pumped into the New England Steel Development Corp. has sparked life into the area's hope for a steel mill. All of the stock in the NESDC has been purchased and a new application for a certificate of necessity for rapid tax amortization has been filed with the National Production Authority.

Instead of the former $250-million mill proposed by the NESDC members in the past and turned down by several big steel firms, the present plan is to construct a $26-million electric-furnace mill. Chief output estimated between 150,000 and 175,000 tons of carbon and alloy steel bars, shapes, blooms, billets and tube rounds will be aimed at the New England market.

Who's Behind It?—Purchasers of the development corporation's stock have not been announced. But they are clients of Reid & Priest, New York law firm which is counsel for Ebasco Services Inc., consulting engineering company. Officials report that the clients are "in the steel business" and the proposed mill will probably be operated as a subsidiary under the name of New England Steel Co.

Ebasco will build the plant, and officials report that at least 500 persons will be employed.

Several plant sites in different states are being considered, officials relate, but no definite decision has been made yet. A big factor in the decision will be the power situation. "We want to take every advantage of power costs possible," they state, "and we're even considering operations during the 'off-peak' power period (time of day when domestic use of electricity is at a minimum) to gain a better power rate."

Hot Prospects for a Cooling Business

With sales headed for a $2-billion volume this year, the air conditioning industry says the revolution is on. Market of $5 billion is predicted in ten years

AIR CONDITIONED living—working, eating, playing and sleeping. That's the prediction and goal of an optimistic air conditioning industry whose sales are expected to hit $2 billion this year and whose officials are eying a possible $5-billion market 10 years from now.

The public was introduced to air conditioning in the 1920s and 1930s in theaters, restaurants, department stores and other public places, but the depression and then World War II held back air conditioning from the American home. Now the industry believes the revolution is under way.

Most Popular—Last year sales of the currently most-popular unit, the room air conditioner, were about $122.7 million. For the first half of 1953, shipments were up 215 per cent, and over a million units are expected to be sold by the end of the year.

Commercial, business and industrial air conditioning sales are also high and enormous increases are expected in the next six years (see table below).

Recession-Proof—The American Institute of Management presents a strong case for a continued upward trend in air conditioning and states that the companies making the equipment are in "as near a recession-proof industry as exists." The pattern is expected to be something like this:

One authority predicts that in a decade year-round air conditioning units of the central-station type providing both filtered heated air in winter and filtered cool air in summer will be a standard feature in homes built in areas where summer weather is periodically uncomfortable. People buying and renting homes will be demanding air conditioning, making it a competitive factor in the housing business.

By Leaps—Sales in the central-station units have jumped from virtually nothing in 1946 to an estimated 60,000 this year. Industry officials are anticipating sales of 120,000 units in 1954 and a steady increase each year to 1958 when 700,000 units are expected to be marketed. Retail volume of the year-round systems is expected to pass the room-unit business in 1956 and in ten years to amount to $1.75 billion. Because of the high cost, AIM doesn't think the heat pump, another year-round unit, will give "undue competition in this decade" to central-station units.

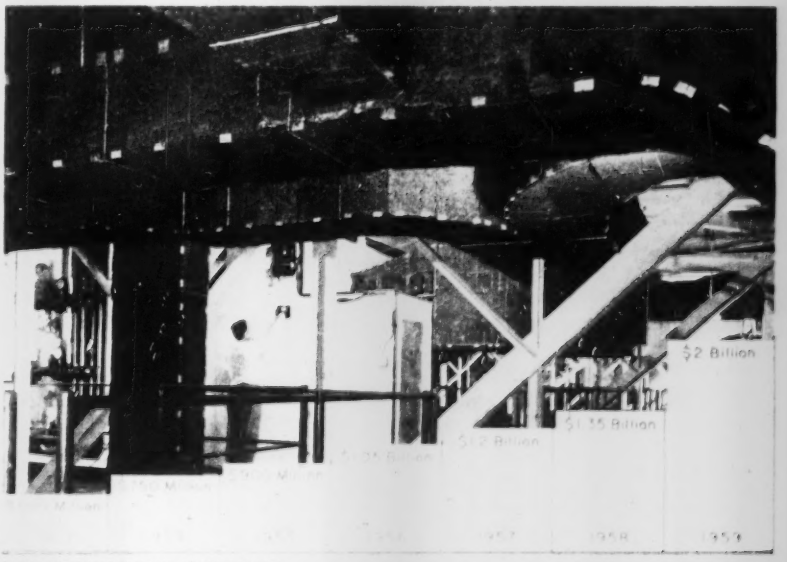
In a recession retail sales in the nation's stores would become more competitive and owners would be forced to install air conditioning to keep present customers and attract new buyers. Real estate experts, according to AIM, say that once the amount of air conditioned office space in any particular city reaches a given point—estimated at about 15 per cent—building owners who do not have it will have to install air conditioning to maintain rent levels and keep tenants.

Industry, Too—To date most industrial plant installations have been for the purpose of controlling or improving manufacturing processes. This will continue, and installations will also be made to provide a comfortable working environment for the workers which will mean improved efficiency of the "human engine". The intangible advantages, officials state, include reduction of labor turnover, more attraction to new employees and prevention of waste and accidents due to fatigue.

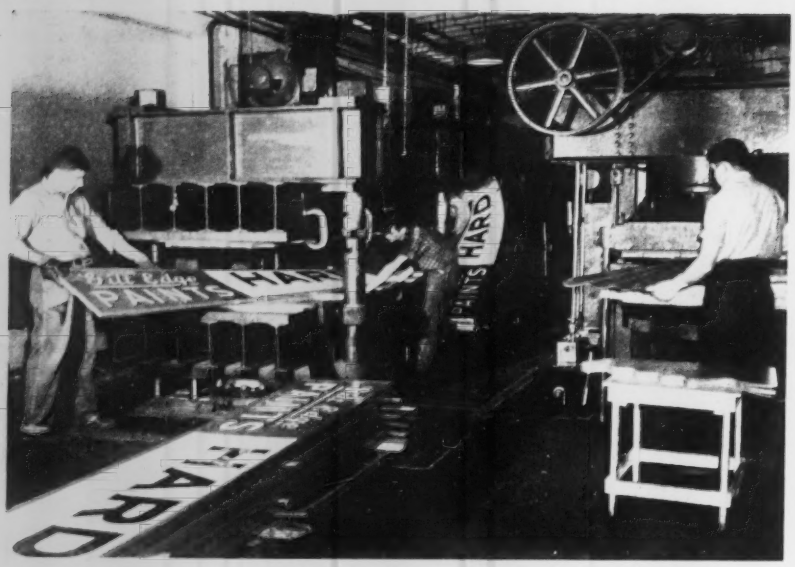
In 1922 there were only three companies listed as being primarily concerned with air conditioning Carrier Engineering Corp., Atmospheric Conditioning Corp., a Carrier subsidiary, and W. L. Fleischer & Co. Inc. Today, there are some 75 additional companies involved in one or more phases of air conditioning.

Future Bright—But even with the tremendous opportunities which are apparent for the future, the industry will not be able to sit back and cool its heels while business rolls untended. Each year several companies are entering the field which brings competition and can result in overproduction. Then, too, there is always the possibility of some new invention which will make present air conditioning equipment obsolete. RCA engineers, for example, are investigating the possibilities of "electronic" air conditioning.

Potential Market for Central System Air Conditioning Equipment
(Industrial, Commercial & Business Structures Only)



Source: American Institute of Management



Hydraulic presses at Allen-Morrison Sign Co., Lynchburg, Va., apply up to 600 tons of pressure to emboss metal moldings, text and design on steel sheets up to 4 feet by 12 feet. Press at left is making signs for Farwell, Ozmun, Kirk & Co., St. Paul. Press at right is making decorative trim for highway signs

Signs Are Good for Sign Sales in '54

Metal shortage for signmakers should be over by end of 1953. More steel and greater sales effort could set the tempo for the biggest year ever

YOU CAN SEE signs everywhere that one of the industries hardest hit by and last to emerge from the metal shortage is beginning to produce at full-tilt again.

From the largest billboard to the smallest street marker, it looks like 1954 will be the biggest boom year of all for signmakers. For the first time in three years, metal supplies will be large enough to make all the signs they can sell. That's good news for small business, because signmakers are mostly small. For example, of the approximately 5000 companies which make $265-million-worth of electrical signs a year, about 80 per cent have four or less employees. Nevertheless, signmakers use over 133,000 tons of carbon steel yearly and 5430 tons of stainless.

Pays Off—Maurice Ely, of National Electric Sign Association, says that dollarwise sales of electric signs this year will be about even with the past few years. But because of competition, prices have been trimmed a little, which means unit volume will be above last year.

Officials of Outdoor Advertising Association of America say that 1953 will be the highest advertising-volume year so far for highway billboards, and 1954 will see even higher sales.

John C. Oliver of Porcelain Enamel Institute states that 1953 as a whole will pretty well hold its own with the past several years in porcelain enamel signs, which constitute 10 to 15 per cent of all signs. But 1954 has the opportunity of surpassing the record year of 1949.

The Other Side—The biggest effect of the metal shortage has been the inevitable shift to plastics. Generally speaking, plastic signs are still more expensive than metal. J. R. Sweeny, president of Porcelain Metal Products Co., Carnegie, Pa., says a $30 metal sign will cost over $100 in plastic.

Another development has been the increased use of aluminum. About 12 million pounds a year are used by the whole industry.

Caution, Curve, Hill — Federal and state highway departments are also large users of signs, and they have had their troubles, too. The Ohio State Highway Department reports it had 285,027 signs and 205,611 posts in service last year on state highways alone. The department normally requires 475 tons of steel a year, but for the past year it has not been able to get bids on steel for road signs.

But those problems will soon be past, and the road ahead is far from clear of signs. Many of the signs made during the postwar rush are coming up for replacement. About 80 per cent of all billboards are still made of wood, and metal signs are taking over as more steel is made available. Thousands of steel signs are carried on trucks, and this use is growing, says Bettinger Enamel Corp., Waltham, Mass.

No wonder signs look good for 1954.

Plodders vs. Trotters

U. S. design engineer says we build workhorse machine tools, Europeans build racehorses

EUROPEAN MACHINE TOOLS displayed at the Exposition of the Machine Tool Industry in Brussels Sept. 3-10 set a "very high standard of appearance with fine finish, simple construction and logical, functional arrangement of controls."

That was the impression gained by Peter Muller-Monk, vice president, Society of Industrial Designers and official SID delegate to the Congress of Industrial Design Sept. 14-16 in Paris.

Racehorses — Much of the machinery displayed was highly specialized, says Mr. Muller-Monk, a Pittsburgh design consultant. For general production work, the U. S. "lion product" with its great flexibility is still tops; but for specific jobs European tools are excellent, and some of them are more nearly automatic than comparable U. S. equipment, he believes. "Americans build a workhorse, Europeans a racehorse," is the distinction he draws.

U. S. tool buyers got red carpet treatment at the Brussels show because dollars are so short. Easily

50 per cent of the tools on display offered U. S. measuring scales.

Theory or Results?—Mr. Muller-Monk summarizes tool trends by nationalities this way:

Engineeringwise, about half of the French tools shown were tops in their class, the other half well behind the times.

The Swiss are solid people and make no mistakes. Manufacturers are cautious about innovations, but what they do they do superbly.

Belgian toolbuilders are gaining steadily. A good crop of enterprising young engineers is coming.

Italians build fascinating, often extreme machines. Many experimental units were displayed. Some Italian tool builders are given to eye-catching tricks that won't last long.

Few British machines were on display, but those were good and sound. British builders, who had a show just last year, are still shy of money. Not many Dutch or Swedish firms were represented, either.

German developments in automatic controls, including combination hydraulic-electric systems, have reached a new state of refinement.

Quizzer on Birthmarking

Military asks industry for constructive criticism of metal marking system

PROPOSED chapter and verse of the new metal marking system for the armed forces are being mailed for comments and possible objections to metal producing, warehousing and consuming industries by the Office of Standardization, Defense department.

The proposed specifications are themselves marked RSVP as the Defense department would like to finalize the specifications and include them in its procurement contracts as soon as possible.

Good for All — Criticisms and recommendations from civilian sources are to be given careful consideration in the final revision of the specs, as they're intended for possible use by producers and consumers in civilian trade as well as in defense. To that end, the marks will show commercial designations such as American Iron & Steel Institute or Aluminum Association alloy types. Physical condition indicators, or "designators," will be recognized symbols. For example, for low carbon, low alloy steel products proposed designators are: Cold rolled CR; cold drawn CD; hot rolled HR; annealed ANL; normalized NORM; and quenched and tempered QT. Specification data, such as type, grade, class and temper, is to be applied when commercial designation is nonexistent.

Method of application of specifications will vary with the product, of course. According to the proposal, bars of $\frac{1}{2}$-inch or more in width of flat or in diameter are to have constantly recurring symbols at intervals not greater than 3 feet printed on them. Smaller sizes are to be bundled and tagged at each end with a third tag near the middle of the bundle on the inside. Castings, ingots, pigs, slabs or billets are to have the symbols permanently cast, stamped or marked in them. Structural shapes are to bear markings in a manner similar to castings, etc. Extrusions and shaped tubing and tubular products of $\frac{1}{2}$-inch in outside diameter are to bear markings in a manner similar to bars. Symbols are to be printed on all plates, sheets, strip and flat products in constantly recurring rows from one edge to opposite edge so that no piece larger than 12-inches square could be cut without bearing the information. For wire products, each spool is to be marked on the ends and each coil or bundle of straightened and cut wire is to be tagged.

Continuous Steel Casting Nears

Allegheny Ludlum Steel Corp.'s continuous steel casting machine rapidly approaches the commercial production stage. W. B. Pierce, vice president and technical director of the corporation, told a regional meeting of the American Iron & Steel Institute a pilot model has been in operation for four years and that "the continuous casting process is one that will concern you all in the future."

Mr. Pierce's complete story on the development and progress of the continuous casting machine will appear in next week's issue (Oct. 12) of STEEL.

AISE Sets Up Scholarship Fund

Association of Iron & Steel Engineers, at its annual convention in Pittsburgh last week, authorized a scholarship fund of $1500 for needy engineering students of high standing to pursue further education at Rose Polytechnic Institute, Terre Haute, Ind.

ERIC L. ANDERSON
. . . 1954 AISE president

The award was established as a tribute to James Farrington, founder and first president of AISE.

One of the highlights of the meeting was a series of papers on electric steel compared with open-hearth operations presented by W. C. Wheeler, management consultant, New York; David D. Moore, assistant supervisor, Engineering Economics Division, Battelle Memorial Institute, Columbus, O.; and Frank W. Brooke, Pittsburgh.

Mr. Wheeler said it is potentially possible that between 1970 and 1975, electric furnace carbon steel will account for about 30 per cent of all steel ingots, based on a projected total rate of 157 million tons of ingots a year.

The association established a new independent section of AISE in the Youngstown district with J. A. Ferguson, electrical engineer at Republic Steel Corp.'s Youngstown District Works, as chairman. New president of AISE for 1954 is E. L. Anderson, superintendent, electrical department, Bethlehem Steel Co., Johnstown, Pa.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor*

The Justice department will examine federal antitrust laws to decide if they jibe with economic reality. Here's a chance to present your opinions

ALL FEDERAL antitrust laws are going to get a close scrutiny—the first time in the 63-year history of that legislation that such a comprehensive look has been taken.

The Attorney General's Committee To Study the Antitrust Laws will examine the Sherman Act, the Clayton Act, the Robinson-Patman Act and the Federal Trade Commission Act as one body of law. The group will determine the merits and demerits of the legislation in curbing—or encouraging—the country's economic growth.

Purpose—"The committee aims at making the law jibe with economic reality," says Robert A. Bicks, executive secretary of the committee. "To do an adequate job, it urgently is in need of the views of businessmen who must comply with the law."

Business organizations are invited to send their views on the antitrust laws and their administration to Mr. Bicks, Room 5112, Department of Justice Bldg., Washington 25. They should take such action promptly.

The Bosses—Cochairmen of the committee are Judge Stanley N. Barnes, assistant attorney general in charge of the Antitrust Division, and S. Chesterfield Oppenheim, law professor at the University of Michigan. They have appointed 56 business lawyers and economists to the committee who have been organized into five task groups to study problems of foreign commerce under the antitrust laws, problems of patents, problems of size and integration, problems of antitrust law administration and enforcement and problems of distribution. Other task groups may be organized later to specialize on additional matters.

Dec. 31, 1954, has been set as target date for submission of a report to the attorney general. Using it as a basis, he will undertake reforms in administration of the antitrust laws and call upon Congress for needed legislation.

Foreign Visitors Coming...

Following a lull during the reorganization of the Mutual Security Agency into the Foreign Operations Administration, the trek of foreigners to the United States to benefit from our technical know-how promises to dwarf the previous records. During the week of Sept. 13-19, ten delegations arrived from Austria, Belgium, Denmark, France, Federal Republic of Germany, Norway, Turkey, China, the Philippines and Thailand. Additional delegations are scheduled to land on our shores at the rate of six to seven a week.

Small Business Gets Support...

With the growing emphasis in recent years on promoting "small business" in the United States through friendly government policies, the small-business lobby has grown to be one of the largest in Washington. More than a dozen groups this year have been active in influencing Congress in behalf of small business.

Among them are: National Federation of Independent Business; Smaller Business of America; National Association of Independent Business Inc.; National Small Business Men's Association; Conference of American Small Business Organizations; Smaller Business Association of New England; American Association of Small Business; Smaller Manufacturers Council; Small Business Men of America; Small Business Council; American Business Congress and Council of Independent Business.

Income Tax Rules Revised...

The first comprehensive revision of Section 118 (Income Tax) of the Internal Revenue Regulations since 1950 has been completed by the Internal Revenue Service and was published as part of the *Federal Register* of Saturday, Sept. 26. Copies may be obtained for 60 cents from the Superintendent of Documents, Government Printing Office, Washington 25.

Zinc, Lead Hearings Soon...

Hearings to determine whether tariff concessions have injured the domestic lead and zinc industries have been scheduled by the Tariff Commission, starting Nov. 3 for lead and Nov. 5 for zinc. The hearings will be held in the commission's hearing room in Washington.

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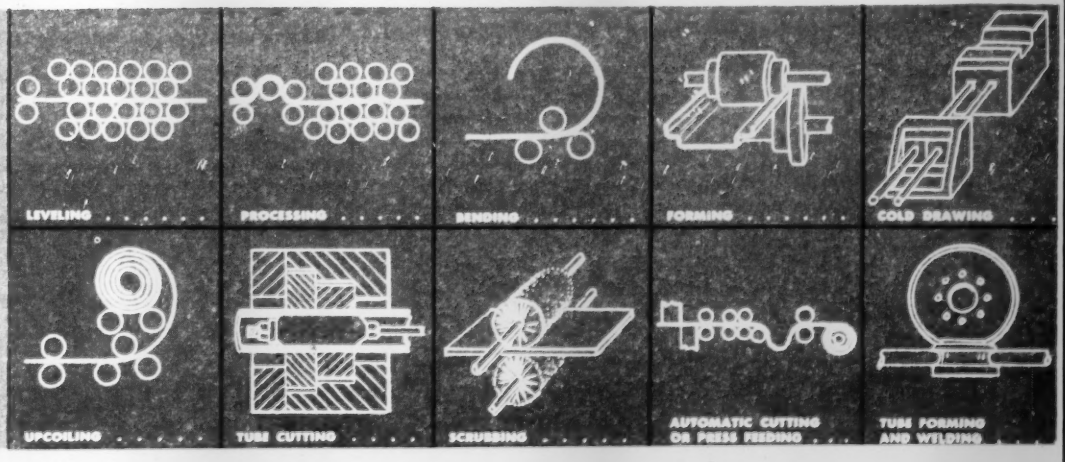

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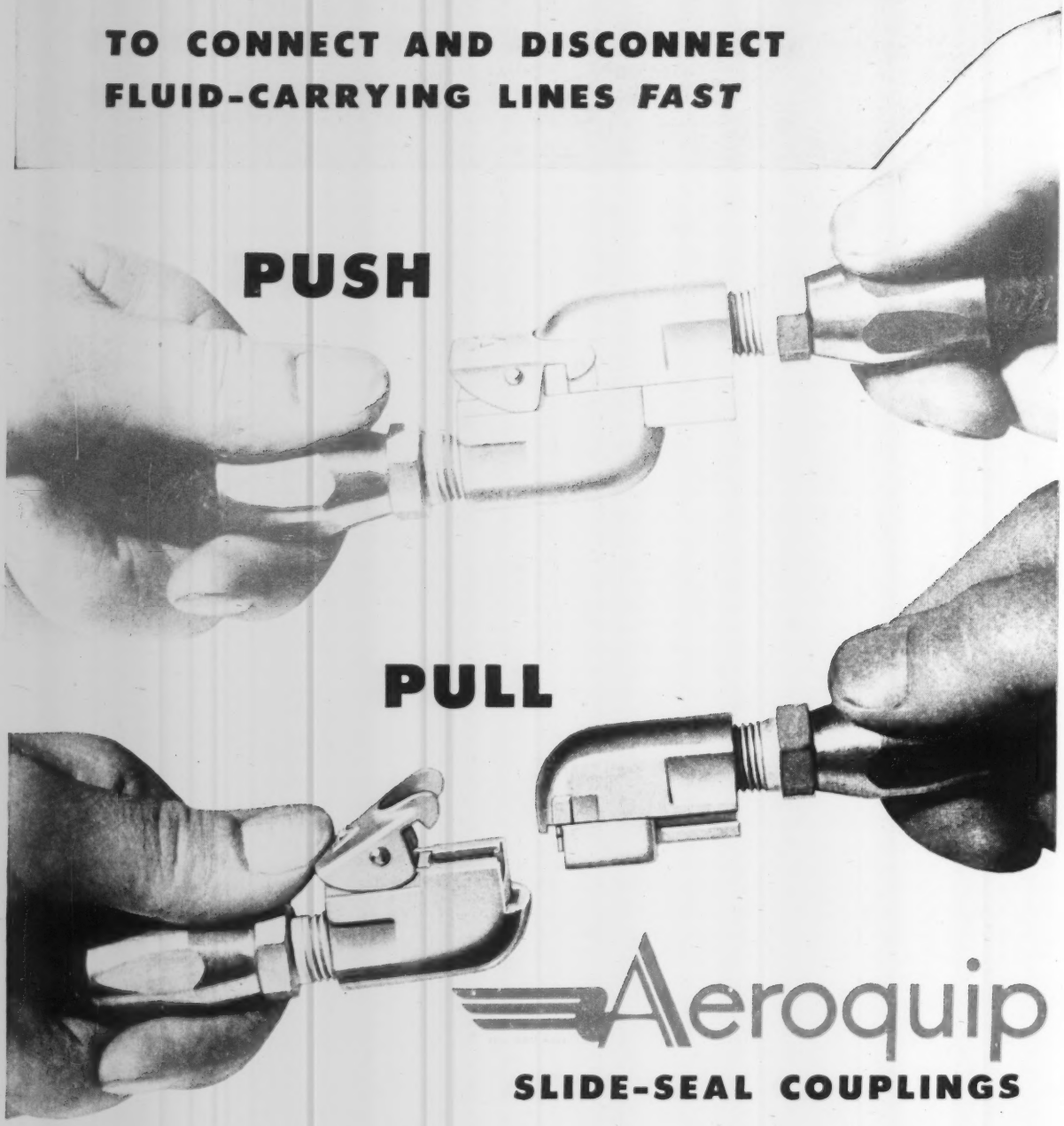

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BRITISH STEEL OUTPUT

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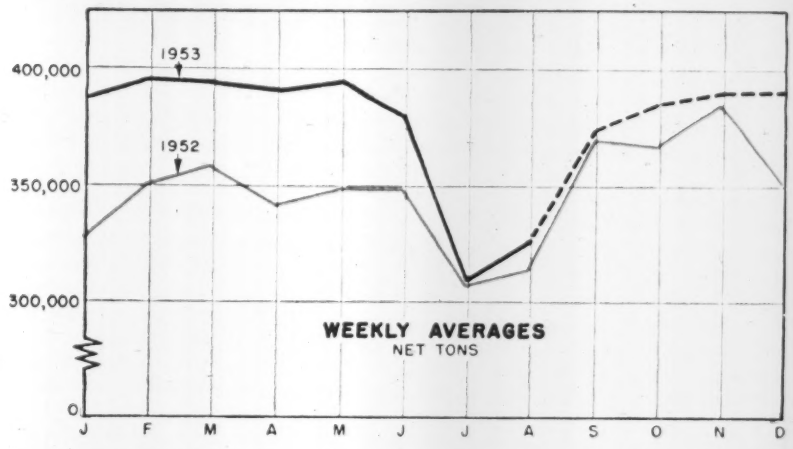


Source: British Iron & Steel Federation.
Projection of September, 1953, to December, 1953, by STEEL.

Britain Reverses Steel Trend

Alone among European steel producers, Great Britain is topping last year's steel output. Exports of metalworking products spell the difference

GREAT BRITAIN stands out like a beacon among European steelmaking countries.

It's the only nation over there still producing steel at rates above those of last year and consistently knocking over monthly output records.

British steel production in August set another record for the month with a weekly average of 326,368 net tons, better than 11,000 tons over the weekly average in August, 1952. Similar new monthly highs were recorded in July, June, May, April, February and January, 1953. Steel output seems a steel-pipe cinch to reach the 1953 target of 19.6 million net tons.

Behind It—What's behind the remarkable showing of British steelmaking industry this year? Two things really. One is increased export trade among the metalworking industries, or engineering industries as the British call them. In 1938 engineering goods formed 26 per cent of total exports while 10 years later that percentage had risen to 38 per cent. By the end of 1952, engineering exports made up 41 per cent of total exports.

July, 1953, figures show metalworking exports gained by $19.6-million over the June total, of which $11.2 million was accounted for by motor vehicles. Machinery exports jumped in value by $5.6-million due mainly to increased shipments of electrical machinery and materials handling equipment.

Heavy Consumers — The other factor keeping the push behind British steel output is all out production in domestic shipyards and railroad rolling stock shops. These industries consume heavy tonnages of steel, particularly plates. Demand for heavy plates is still at a peak in England. Only recently have shipbuilders and rolling stock builders felt their supply of plates slip back from the "critically short" condition.

It's illuminating that the only segments of British metalworking which are now slack, such as small foundries, are those which have been unable to develop their export trade.

Credit an Assist—A general improvement in raw materials supplies is helping British steelmakers keep high production rates. During the first half of 1952 imports of scrap at the Tees ports amounted to only 20,000 net tons. In the same period of 1953 the total was 129,800 tons. Supplies of scrap have improved so much, in fact, that the national scrap drive in England is to end on Dec. 21. Imports of foreign iron ore made similar though not as remarkable gains, increasing some 4500 tons to about 5.6 million tons in first half, 1953. At the same time steel imports are falling.

Coal output strikes a sour note, however. Through August, salable production has reached 160,138,000 net tons compared with 162,562,000 net tons in the same eight months of last year. The industry is still losing labor. Absenteeism remains at about 12.5 per cent of total workforce. Net result: Winter stocks are nearly 2 million tons below the level of a year ago.

Willys Expands Overseas

Nederlandsche Kaiser - Frazer Fabrieken N.V., Rotterdam, Netherlands, will begin immediate assembly of the entire line of Willys passenger and commercial vehicles following a new contract with Willys - Overland Export Corp. Other Willys overseas manufacturing and assembly plants include facilities in Mexico, Japan (STEEL, Sept. 21, p. 87), Brazil, Indonesia, India, South Africa and Belgium.

Following the U.S., U.K.

West Germany exports more machinery than any other country in the world except the U. S. and Britain. Almost $900 million worth of machines were exported in 1952—40 per cent of West Germany's exports of manufactured goods and 21.2 per cent of total West German exports.

Trade Control Report

If you're a Whodunit fan, you'll enjoy reading the third report to Congress on the functioning of the Mutual Defense Assistance Control Act of 1951, "World-wide Enforcement of Strategic Trade Controls." This is the way you wish all government reports were written but aren't.

What's New in Pensions and Insurance?

By CHARLES D. ROOT JR.
Consultant
Towers, Perrin, Forster & Crosby Inc.
Philadelphia, Pa.

FOR HUNDREDS of companies 1954 will be a year of pension and insurance decision.

This year saw Ford, Chrysler and General Motors liberalizing pension benefits. United Steelworkers contracts can be reopened for pension bargaining next year. Other unions are eager to ride the bandwagon, with the big demand likely to be for pensions which meet changing times better than a fixed number of dollars per month. Unions will be asking for more inclusive medical benefits and other insurance, too.

When the contracts are reopened it will be a wise executive who knows what's new in pensions and insurance. Variable annuity plans, profit sharing, catastrophic medical expense and group paid-up insurance may all be discussed.

Pension Buying Power—One of the most recent developments in pensions is the variable annuity plan. It is an attempt to eliminate a basic weakness of pension plans: Pension payments of dollars rather than buying power.

One approach to this problem has been to tie the pension payments into some such standard as a cost-of-living index. This approach has generally been discarded as undesirable because of the unpredictable financial liabilities which might result.

A second approach is to relate some part of the pension benefits to the changing values of securities held in a pension fund. This is attended by none of the financial hazards of the other approach, but it may or may not do the desired job as well as the direct cost-of-living tie-in.

The principle behind this approach is that equity investments have generally followed a long range cost-of-living index. If they continue to do so, an equities fund would provide a built-in inflationary hedge of total dollar benefits for retiring employees.

How It Works—The general procedure in a plan of this type is to provide the usual standard guaranteed dollar program as a base plan and supplement that with a variable annuity plan. The variable annuity portion of the plan may receive perhaps as much as half or a third of the total money deposited in the two plans. Employees participate in the variable annuity portion of the plan by shares of the equities fund, each share having a value that changes in direct relationship to the changes in the total assets value of the fund. Fund values are the current market values of the equity securities, plus any other assets. An employee, when retired, receives in addition to his basic fixed dollar pension a lifetime pension of benefits accruing from his shares in the supplemental plan.

At least two plans of this type are already in existence in industry, one at Chemstrand Corp., Decatur, Ala., and the other at Long Island Lighting Co.; more are on the way. Extensive research into the probable performance of such a plan shows that most pensioners for several decades past would have been better off if part of their pension payments had resulted from common stock investments as a supplement to the part invested in regular annuities.

Sharing Profits—In the postwar years there has been a resurgence of interest in profit-sharing pension plans, especially those involving deferred payments. Improved employee morale, better employer-employee relationships, a means of selling the American competitive enterprise system, reduced turnover of employees and currently tax-free deferred compensation are some of the reasons for adopting such programs.

Profit-sharing appeals to employers because there is no cost commitment except in periods of company prosperity. In a deferred profit-sharing fund, payments are made by the company only in years in which the company has profits. Normally, the higher the profits, the larger the contributions and the larger the proportionate tax credit, thus producing a lesser net cost to the company per dollar of pension benefit granted.

Happy Combination — Here again, a combination plan is feas-

ible. The basic plan is a standard pension plan, supplemented by a deferred profit-sharing plan in the hope that it will ultimately provide a substantial portion of the total pension benefits. It is also possible to employ the variable annuity concept in a profit-sharing plan by investing some portion of the profit sharing fund in equity investments. As of June 30, 1953, the Treasury department had approved approximately 5500 pension plans with profit-sharing features and several hundred more are awaiting approval.

In many companies, immediate financial gain has resulted from the adoption of a retirement plan. A company with 2500 employees adopted a retirement plan, retired 37 employees. From those 37 retirements came 220 promotions. Not all of the 37 employees retired needed replacing, and the new payroll plus the pensions paid to the men retired was less than the old payroll. Even more important was the greater *esprit de corps* which produced a more efficient organization.

Big Doctor Bills—Medical insurance is in the transition stage too. Labor demands are likely for the extension of medical insurance beyond the usual limits of the common hospital, surgical and medical plans. Catastrophic medical insurance, also known as major medical expense insurance, may be the answer. Plans of this type currently in operation sometimes require the employee to pay the full cost of his coverage which may amount to somewhere between $1 and $5 a month; in other cases the company and the employees jointly finance the benefits.

The coverage is usually for a percentage (for example, 80 per cent) of costs after the employee has assumed a "deductible cost" of $100 or $200. Protection is usually afforded to a maximum of several thousand dollars.

Borg-Warner Corp., General Motors Corp., Reynolds Metals Co. and Inland Steel Co. are examples of companies which have catastrophic medical insurance plans.

Group Paid-Up Insurance — In addition to pension and medical plans, many companies offer their employees group insurance, the majority on a one-year term basis. Some of the plans are contributory and some are employer pay-all. In all of them, however, no values are available to an employee as a result of his years of participation either when he terminates employment or retires. Another undesirable feature of the one-year term plan is the difficult cost problem which faces an employer who may want to consider continuation of some group insurance on his pensioners.

A group paid-up insurance plan is tailor-made for those two problems. Under such a plan there are insurance and cash values available to an employee on termination of retirement. Because the insurance for the pensioner is purchased prior to his retirement, there are no costs for continued coverage afterwards.

Such a plan usually involves employee contributions. The contributions are guaranteed to be returned to the employee in the event of termination of employment (if he wants to withdraw them), or he may leave them with the insurance company to provide continued paid-up insurance.

Popular Plan — Employees like this coverage because of its permanent insurance and cash termination values. Employers like it because it continues some portion of an employee's group insurance coverage after retirement with no further payments by either employee or employer. The employer's cost of initiating such a plan equals the cost of a typical noncontributory group life plan, and after inception the plan costs diminish for many years.

This type of plan is well beyond the laboratory stage. The pilot plan was initiated by the International Harvester Co. in 1941 and has worked with complete satisfaction. Increasing numbers of such plans are being set up in recognition of the economical and equitable solution they provide in solving the problem of insurance for pensioners. Dodge Mfg. Corp., Farmington Mfg. Co., Harley-Davidson Motor Co., Link-Belt Co. and International Nickel Co. are among companies which now have paid-up group insurance plans.

State of Mind—Security is as much a state of mind as a financial fact. No plan, however liberal, well tailored and well conceived, can give full value for money spent unless those covered by it understand its provisions and how it affects them and their families. An important addition to a sound benefit plan, therefore, is a well-balanced program to communicate it to company employees.

Once a company has adopted a plan, it must be sold on a continuing basis or much of its value is lost. Group meetings, articles in company publications, bulletin board displays, annual statements to employees of values accrued are some of the successful methods being used to sell benefit plans.

Time for the Bell — The next round in pensions and insurance is about to begin. Now is the time to anticipate union demands, to gather unbiased information, to plan counter proposals. The company that knows what's new and possible in pension and insurance programs will have a big edge in the bargaining.

Did You Know . . .

That pensions can be tailored to provide for a rising cost of living?

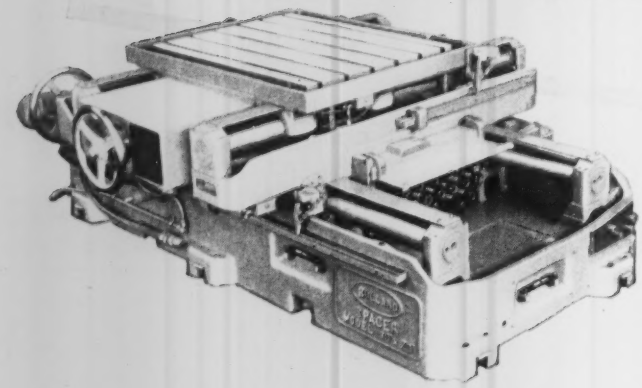
That profit-sharing pension plans have distinct tax advantages?

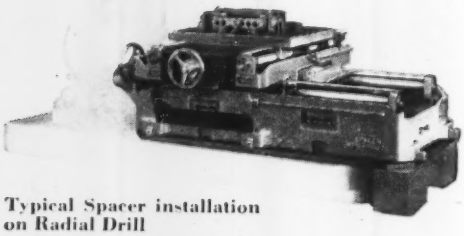
That major medical insurance with a deductible feature is now available?

That 1954 will be the year when unions will press for insurance and pensions in smaller companies?

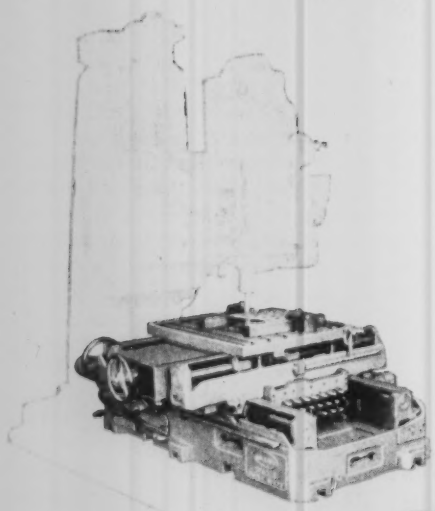
. . . Are You Ready?

EVOLUTION.....
FIRST JIGS *then*
BULLARD SPACER





Typical Spacer installation on Radial Drill



For Higher Degrees of Accuracy, the Spacer is installed on Cincinnati Super Service fixed arm Drill

Jigs and templates are the old original means of repetitive production of a pattern of accurately spaced holes.

Today, through Evolution and Engineering Skill, Bullard has developed a FASTER, more Accurate and LESS COSTLY Method for this type of work.

Interchangeability of parts in small quantities at minimum cost is most important in modern manufacturing.

NO TIME REQUIRED FOR: —

Jig Design — Jig Handling

Jig Processing — Jig Storing

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When writing, mention "EVOLUTION".

THE BULLARD CO.

BRIDGEPORT 2, CONNECTICUT

By FLOYD G. LAWRENCE *Detroit Editor*

Mirrors of Motordom

In producing the Corvette, mass-builder Chevrolet is turning out one of the world's lowest volume cars. Output of 75 monthly now will climb to 1000 next year

DETROIT

LOUIS CHEVROLET would be proud of the Corvette. Built in a customer delivery garage on a scale romantically reminiscent of the early days of auto production, the Corvette is a determined hell-for-leather sports car good enough to drift around anybody's hay bales. And it all began as a publicity stunt.

Publicity Start—Just about a year ago the design of the original Corvette was approved for a model to attract attention at the Waldorf show in New York. To add spice to the "advanced thinking at Chevrolet," it was unsuspectingly announced that "some will be built." The theory was that the few serious takers could quietly be escorted into the back room and sold a Bel Air convertible, an eminently more practical machine.

But this innocent bit of publicity pleasantry was quickly shattered with such devastating inquiries as "how much will it cost?" and "when can I buy one?" Faced with an armada of blank checks, Chevrolet fell back and hurriedly regrouped. The decision was inescapable. The nation's top volume auto producer was going to have to add one of the world's lowest volume models to its line, and in January plans for production began to come to life.

100 Thus Far—To date about 100 of the Fiberglas-bodied Corvettes have been built at the Chevrolet customer delivery garage in Flint, Mich., near the car and truck assembly plant. The method of construction constitutes one of the most incredible mixtures of mass production and hand labor to hit the auto world in decades, with the estimated output of 250 cars this year being equal to just one-half-hour of the conventional Chevrolet production.

The chassis line is rudimentary but thoroughly understandable. Six chassis long, the line starts with the specially-designed Corvette chassis inverted. Supplied by A. O. Smith Corp., the unit affords the exceptional rigidity required. To this chassis are added the spring and axle assemblies. A Hotchkiss drive is used on the Corvette because of the lowness of the car rather than the usual Chevrolet torque tube drive. Front suspension is standard Chevrolet with the front stabilizer repositioned. As an aid to stability, the rear springs are mounted outside the frame.

Engine Modifications — After chassis rollover is accomplished on a chain sling and hoist, the blue flame engine with Powerglide transmission assembled is lifted from the test stand and dropped into the chassis. Modifications of the power plant for the Corvette include high lift cams, 8-to-1 compression ratio, lowered water pump and fan assembly, three side-draft carburetors, aluminum intake manifold and a redesigned cylinder head to accommodate the manifold. The hopped-up Chevrolet engine is rated at 150 hp at 4200 rpm, but there are 5000 rpm readily in hand. The Powerglide transmission is slightly modified to handle the increased torque and to upshift at 55 mph under full throttle.

Following chassis build-up which reaches a high point with the installation of dual exhausts, the chassis is moved by hand under a lightly used hoist which drops three bodies daily onto the chassis line. Before the body arrives at the hoist it has passed through an interesting evolution which began as resin and glass fiber before the 41 parts were shipped to Flint for assembly.

The Bag Method—Most Corvette parts are being produced by the bag method, though matched metal dies are coming into increased use as they can be made and should be used throughout by the first of the year. In the bag method, the interior of the mold is sprayed with a parting agent, and an application or resinous gel-coat to produce the smooth exterior of the finished part is applied. Next three layers of Fiberglas mat are layed up in the mold and a back-up mold is then placed like a lid over the impregnated Fiberglas. In most parts the ratio is 40 per cent Fiberglas to 60 per cent resin.

Pressure on the still-moist laminated part is exerted by clamping a sheet of polyvinyl plastic over the mold and exhausting the air between the back-up mold and the sheet. This effects a vacuum and

Hornet Emerges from the Nest

First model to buzz into the 1954 car market is the Hudson Hornet, billed by Hudson Motor Car Co. as the national stock car champion. Changes from the 1953 models are mostly in styling, with longer, lower appearance, luxurious interiors and an "Instant Action, Super Induction" 160-hp engine headlining the sales pitch. Power steering and power brakes are available as optional equipment

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equal pressure at all points, and heat is used to hasten the curing process. Curing time is about 4 minutes.

Put Together—The 17 major parts and assorted brackets and braces which comprise the remainder of the 41 parts are then trimmed of flash on band saws and shipped to Flint for assembly which begins in the orthodox manner with the floor pan or underbody.

A special drill jig which was itself a former underbody is first lowered onto the unit and rivet holes are drilled in the part. The underbody is a one-piece "foundation" which extends from the rear bumper through the dash to which subassembled upper and front sections are bonded and riveted along a flange on the exterior of the body. This joint is later covered by chrome moldings.

Much of the work in the body build-up area involves subassembly of these major sections which involve a number of Fiberglas braces. Joining these parts involves the use of exothermic bonding agents and rivets. Prior to making the bond, workers roughen the surfaces to be joined and apply the bonding agent. The parts are then mated in fixtures or with locating pins, clamped and riveted. After a period or perhaps 8 minutes, a time predetermined by the quantity of catalyst added, the bonding agent suddenly emits heat and the parts are fused together forming a bond analogous to a weld in metal.

Matter of Economics—As might be suspected, Chevrolet discovers both advantages and disadvantages in Fiberglas. Parts are light, and two men can carry a complete body shell. The quick molding of parts affords a short cut in primary design processes and makes possible in laminates that which cannot presently be effected in steel. But the fabrication of plastic bodies requires more labor and greater floor space than steel bodies, and if volume goes above 15,000 cars a year a switch to steel is indicated because of the costs involved.

Chevrolet notes, however, that recent developments show promise of eventually fitting manufacture to the "station system" in which one worker produces in volume exclusively at one machine or at one point along an assembly line. The Corvette operation will be moved to St. Louis shortly. And with a production target of 1000 units a month next year compared with less than 75 monthly at present, the prognosis is for some eye-opening steps in volume plastic body production. Chevrolet is making no secret of the fact that it has learned a great deal about plastic body production at customer delivery garage in Flint.

Auto, Truck Output

U. S. and Canada

	1953	1952
January	612,815	424,559
February	623,793	464,577
March	752,474	525,024
April	782,453	570,464
May	685,390	542,559
June	713,206	542,479
July	757,595	226,134
August	641,242	322,755
September		595,715
October		656,767
November		548,782
December		569,715
Total		5,989,509

Week Ended	1953	1952
Aug. 29	152,866	122,659
Sept. 5	132,574	111,095
Sept. 12	122,863	137,295
Sept. 19	146,912	147,748
Sept. 26	140,678	141,228
Oct. 3	142,000*	143,234

Sources: Ward's Automotive Reports. *Estimated by STEEL

Driving the Corvette

There will be no arguments as to whether or not the Corvette is a sports car. Utilizing a 16 to 1 steering ratio with a 102-inch wheelbase the little "sloop of war" is undeniably nimble. With road clearance of six inches and a cowl body height of 33 inches, the center of gravity is lower than some European sports jobs.

Getting into the Corvette is more difficult than getting into an MG since the door opens from the rear rather than from the front. Once inside, however, leg room is ample, and the bucket seats provide security in cornering as well as comfort. Visibility with the wrap-around windshield is superlative for persons of average height, but the top bar is right at eye level for six-footers.

Interiors are eminently luxurious and include a speedometer reading enthusiastically to 140 mph and a small, centrally located tachometer too far from normal driving eye span to serve any useful purpose except perhaps in tuning the engine. But with Powerglide the tachometer is unnecessary in shifting, though the selector level is located appetizingly atop the transmission tunnel to delude the purists.

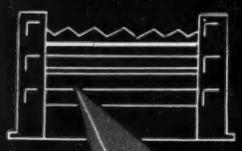
But the true delight of the Corvette is in whipping it over a handling road or floorboarding it on a long straight—as the joy of a sports car should be. With about two miles of windup the Corvette indicated 110 mph with a few still to come. Acceleration from 0-60 is 11.4 seconds with good acceleration characteristics remaining at 80-85 mph. On the handling road at the GM proving ground, a serpentine black top stretch with normally sharp curves, the car rolled only slightly and drifted beautifully with ready correction.

The Corvette is a sports car that rides and handles much like a Jaguar. But handicapped with 2850 pounds and the Powerglide transmission which strangles its performance with smoothness, the Corvette would be well down the line in its class in sports car competition.

The Corvette lists at $3490 loaded, and initial distribution will be to influential people in diversified geographical areas. The man in the street will get his crack at the car in a couple of years.

Exhaust Notes

Cadillac's J. M. Roche reports that 93.4 per cent of 1953 Cadillac cars have thus far been equipped with power steering, indicating that "it is by no means impossible that in the near future power steering may become standard equipment." Mr. Roche also says that one of four Cadillacs may soon be equipped with air conditioning with 90 per cent of new Cadillacs delivered in one Texas area equipped during a recent period. An all-time production record during the first eight months of 1953—85,000 Cadillacs—is also reported.



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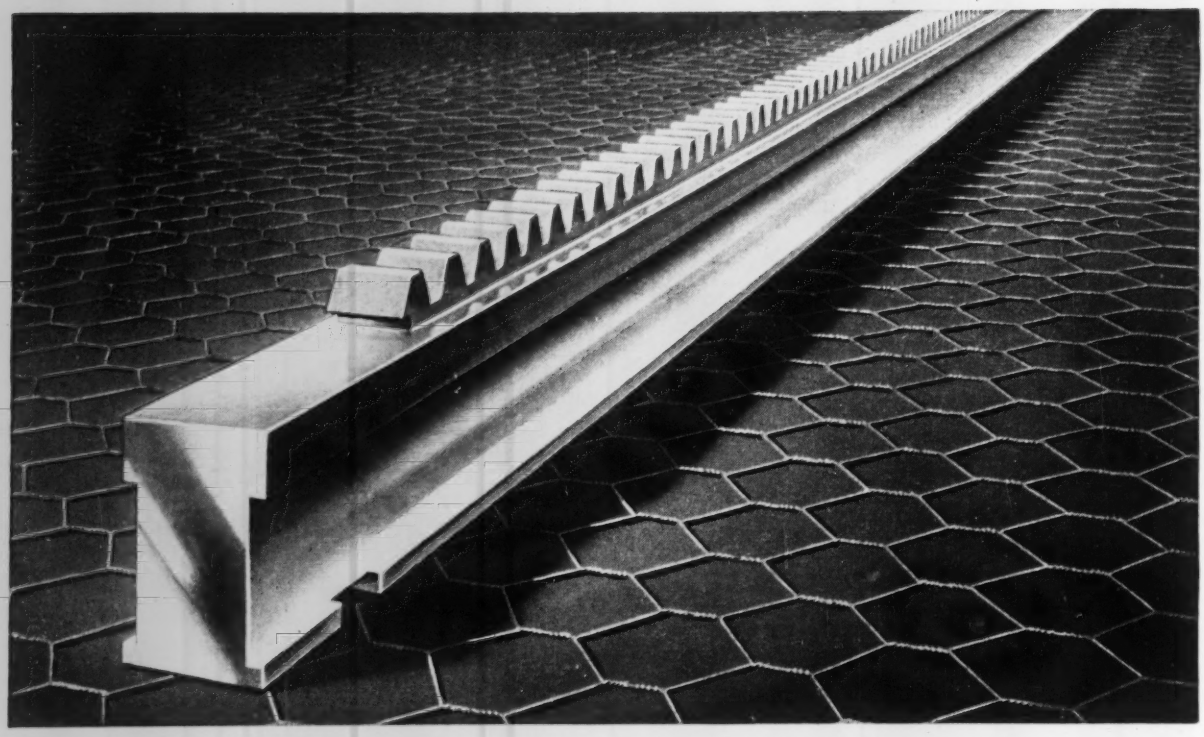


7-foot Graph-Mo® steel rack hardened without distortion

THIS long, slim gear rack, part of a new Wean Equipment Company hexagon netting machine, started out as a problem child.

With the first steels tried, case hardening caused extreme distortion. And the few racks that did harden straight enough to be useable did not wear well.

As soon as the manufacturer turned to Graph-Mo®, one of four graphitic steels developed by the Timken Company, the problem vanished. Because Graph-Mo responds uniformly to heat treatment, the racks hardened without distortion. Heat-treating scrap was completely eliminated.

In addition, the Graph-Mo racks gave exceptional wear. First, the free graphite in Graph-Mo's structure acts as a built-in lubricant—reduces friction between the rack and the gears it engages. Second, diamond-hard carbides in Graph-Mo give it great resistance to abrasion and wear.

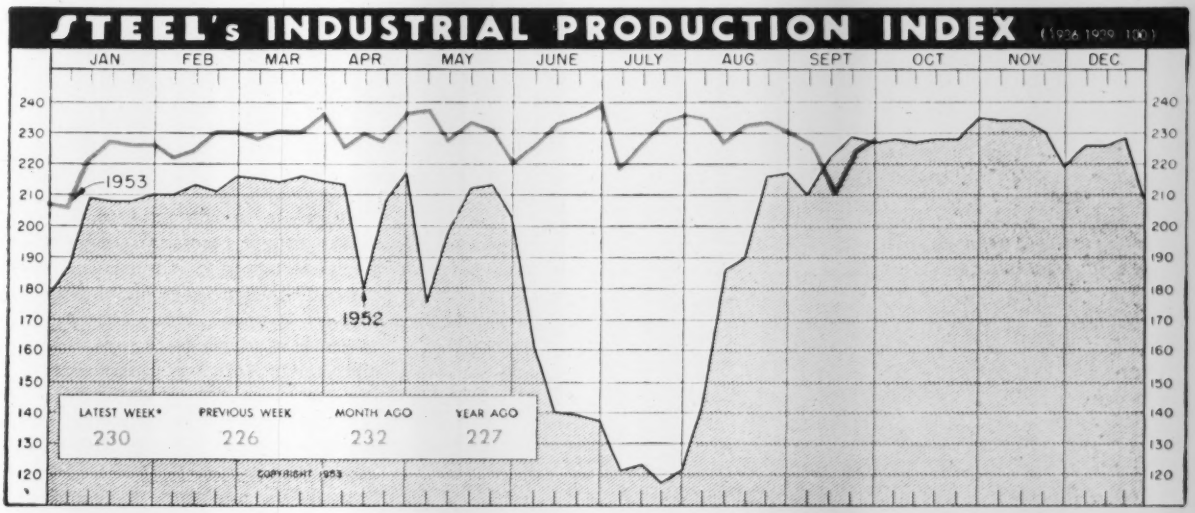
On top of all this, there was a 30% saving in machining time—Graph-Mo being easier to machine than ordinary tool steels.

For helpful information on the use of Graph-Mo and other graphitic tool steels for machine parts, dies, punches and gages, write for the 10th edition of "Timken Graphitic Steel Data Book". The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING

The Business Trend



*Week ended Sept. 26 Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automotive Assemblies (Wards' Reports) 20%

High employment level and increased bank clearings set pace for brisk autumn business. Continued rise in real income supports good retail sales

INDUSTRIAL OUTPUT continued to rise during the week ended Sept. 26. Its pace is still slightly below that prevailing before Labor Day but within a few weeks the autumn business pickup may lift it to the August level.

Reflecting the increased outturn, STEEL's industrial production index climbed to 230 per cent of the 1936-1939 average. Largely responsible for the four-point gain over the preceding week was the rise in steel output. Furnaces of the industry poured 2,144,000 net tons of steel for ingots and castings, the American Iron & Steel Institute says. This production was the highest in many weeks. But for the slide in automobile output, caused by "changeover difficulties," industrial production would have risen even faster.

Bank Clearings Jump . . .

A brisk business pace has set the stage for the fourth quarter. Bank clearings and employment are both up. In the week ended Sept. 23, bank clearings totaled $19,784,010,000, according to Dun & Bradstreet. These transactions showed a sharp 10.5-per-cent rise over the preceding week and were 6.6 per cent above the corresponding 1952 week. Preceding the rise in bank clearings was the high level of employment in August. Civilian employment during that month reached 63.3 million. The 49.4 million employees of nonfarm industries set an all-time high for the month, says the Bureau of Labor Statistics.

Employment Levels Off . . .

Apparent from the August employment figures is a trend toward a leveling-off of employment. The late summer upswing in nonfarm employment was smaller than usual. Moreover, the latest survey by the National Association of Purchasing Agents reveals more layoffs than new hirings. While this is an unusual condition for September, a leveling-off was not unexpected. When capacity catches up with demand, employment always levels off.

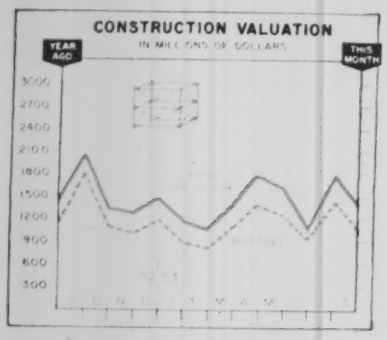
Retail Sales Good . . .

While the leveling-off of employment reveals the balancing of supply and demand, the increased bank clearings reflect both a sharp seasonal rise in commercial loans and the good rate of retail sales. During the week ended Sept. 16, commercial, industrial, and agricultural loans rose $338 million at reporting member banks of the Federal Reserve System in leading cities. Almost at the same time, in the week ended Sept. 19, weekly department store sales jumped 6 per cent above the level of the corresponding week in 1952. This gain in retail sales is a continuation of the August activity, which was also 6 per cent above a year ago.

Farm Prospects Brighten . . .

The continuous increase in retail sales of food, the recent extensive southwest drought and the rise in food prices may be a forerunner of better times for the farmer, whose purchasing power has declined for about two years. Purchases of food this summer have continued their steady upward trend of 1951 and 1952. For the first eight months of the year, food sales were 3 per cent above a year ago in dollars, with physical volume up even more.

The southwest drought, with its resultant reduced marketings, should force some food prices up, thereby also aiding the farmer. Perhaps this occurrence has already begun. The consumer price

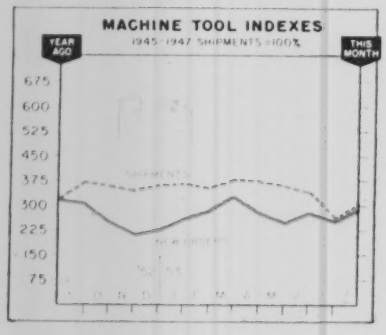


Construction Valuation

(37 States)—In Millions of Dollars

	Total		Building	
	1953	1952	1953	1952
Jan.	1,075.9	902.1	867.0	695.4
Feb.	1,021.3	885.2	792.9	697.8
Mar.	1,317.5	1,321.3	1,054.4	1,056.0
Apr.	1,741.5	1,597.5	1,354.2	1,243.9
May	1,606.1	1,563.6	1,219.8	1,216.2
June	1,415.5	1,488.8	922.3	1,133.3
July	1,763.3	1,511.3	1,417.8	1,170.8
Aug.	1,414.4	1,438.7	1,053.4	1,147.5
Sept.	.....	2,039.2	.....	1,790.8
Oct.	.....	1,310.1	.....	1,042.8
Nov.	.....	1,248.8	.....	989.9
Dec.	.....	1,467.4	.....	1,147.7
Total	.....	16,774.9	.....	13,362.1

F. W. Dodge Corp.

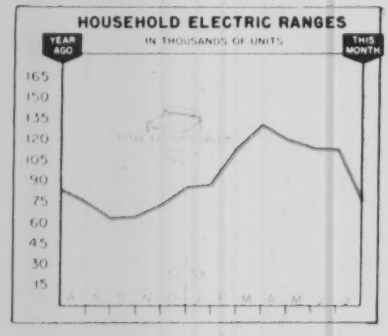


Machine Tool Indexes

1945-1947 Shipments—100

	New Orders		Shipments	
	1953	1952	1953	1952
Jan.	255.8	347.8	361.6	266.6
Feb.	282.1	318.8	354.5	279.6
Mar.	327.0	324.3	375.9	299.5
Apr.	276.8	293.5	372.7	307.9
May	240.4	284.6	356.0	323.0
June	273.4	342.9	342.2	330.8
July	247.3	376.3	267.6	259.7
Aug.	287.9	311.1	301.4	317.0
Sept.	.....	302.4	.....	368.3
Oct.	.....	243.3	.....	357.8
Nov.	.....	265.4	.....	342.5
Dec.	.....	225.2	.....	355.0

National Machine Tool Builders' Assn.

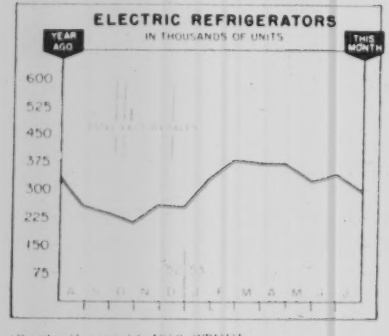


Household Electric Ranges

Total Factory Sales—Units

	1953	1952	1951
Jan.	88,145	79,982	130,316
Feb.	114,465	63,063	121,585
Mar.	130,788	93,225	159,865
Apr.	118,909	69,149	118,823
May	111,401	68,117	106,685
June	113,036	86,847	106,589
July	77,836	83,165	60,530
Aug.	.....	71,853	64,042
Sept.	.....	62,404	93,561
Oct.	.....	63,143	109,043
Nov.	.....	72,982	101,476
Dec.	.....	84,630	72,140
Total	.....	901,860	1,244,615

National Electrical Mfrs. Assn.



Electric Refrigerators

Total Factory Sales—Units

	1953	1952	1951
Jan.	325,186	260,259	465,903
Feb.	377,605	259,538	403,035
Mar.	368,498	276,972	558,503
Apr.	366,951	225,994	409,887
May	317,667	217,017	309,722
June	343,114	324,885	261,288
July	298,838	333,877	163,922
Aug.	.....	250,224	165,309
Sept.	.....	240,111	193,929
Oct.	.....	207,065	191,519
Nov.	.....	256,530	147,394
Dec.	.....	248,506	196,403
Total	.....	3,091,431	3,465,824

National Electrical Mfrs. Assn.

Charts Copyright 1953 STEEL

Issue Dates on other FACTS and FIGURES Published by STEEL

Durable Goods . . . Aug. 10	Gray Iron Castings Sept. 7	Ranges, Gas . . . . . Sept. 7
Employ., Metalwk. Sept. 28	Indus. Production Sept. 14	Steel Castings . . . . July 20
Employ., Steel . . . Aug. 31	Ironers . . . . . Sept. 21	Steel Forgings . . . . . July 20
Fab. Struc. Steel . . Sept. 21	Malleable Castings Sept. 7	Steel Shipments . . Sept. 7
Foundry Equip. . . Sept. 14	Prices, Consumer Sept. 28	Vacuum Cleaners . . Aug. 3
Freight Cars . . . . . Aug. 24	Prices, Wholesale. Sept. 28	Wages, Metalwk. . Sept. 28
Furnaces, Indus. . Sept. 14	Pumps . . . . . Aug. 24	Washers . . . . . Sept. 21
Gears . . . . . Sept. 21	Radio, TV . . . . . Aug. 31	Water Heaters . . . . Sept. 14

index of the Bureau of Labor Statistics shows a 0.3 per cent increase between July and August. The index for August stood at 115.0 per cent of the 1947-1949 average, with the 0.3 per cent gain in the food group playing an important part in the over-all price gain.

Real Income Climbs . . .

The basic factor in the increased retail sales is the gain in disposable personal income. This income gain, along with the widespread use of credit, has enabled consumers to spend about 70 per cent of their real income on retail purchases, the Office of Business Economics says. A further breakdown of retail expenditures reveals that buyers are spending 25 per cent of disposable personal income on durable goods, up slightly from last year, while nondurable consumption takes 45 per cent, about the same as 1952.

Consumers' Condition Good . . .

The entire financial picture of consumers also looks favorable. In early 1953, most consumers owned assets in excess of their debts, according to the Federal Reserve Bank. Nearly half of the 54 million spending units in the population were worth $5000 or more, and one-tenth were worth at least $25,000. The aggregate value of consumers' assets totaled $725 billion, while the total debt amounted to $84 billion. Four out of ten consumers owed no debt at all, and the largest single asset of consumers was nonfarm homes, which had a value of $250 billion. Of this sum, only $50 billion represented debt. The owners' equities of $200 billion were four times as large.

Manufacturers Watchful . . .

Manufacturers also seem to be healthy. They are controlling inventories as carefully as other businesses. Their unworked material inventories took another dip in September for the third month in succession, the National Association of Purchasing Agents reports. Meanwhile, some manufacturers have reported sizable increases in orders. For example: August bookings of industrial furnaces and

BAROMETERS OF BUSINESS

	LATEST PERIOD	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	94.5	90.0	102.5
Electric Power Distributed (million kwhr)	8,354	8,395	7,625
Bitum. Coal Output (daily av.—1000 tons)	1,613	1,353	1,929
Petroleum Production (daily av.—1000 bbl)	6,490[1]	6,495	6,507
Construction Volume (ENR—millions)	$341.2	$180.8	$317.1
Automobile, Truck Output (Ward's—units)	140,678	146,912	141,228
TRADE			
Freight Car Loadings (unit—1000 cars)	830[1]	824	862
Business Failures (Dun & Bradstreet, no.)	152	182	156
Currency in Circulation (millions)[3]	$30,210	$30,335	$29,247
Dept. Store Sales (changes from year ago)[3]	+6%	−11%	−2%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$19,784	$17,903	$18,551
Federal Gross Debt (billions)	$272.4	$273.3	$262.6
Bond Volume, NYSE (millions)	$12.5	$17.3	$15.7
Stocks Sales, NYSE (thousands of shares)	5,538	9,468	6,183
Loans and Investments (billions)[4]	$79.5	$79.1	$79.0
U. S. Gov't. Obligations Held (billions)[4]	$31.6	$31.5	$31.9
PRICES			
STEEL's Finished Steel Price Index[5]	189.38	189.38	181.31
STEEL's Nonferrous Metal Price Index[6]	204.3	203.2	221.0
All Commodities[7]	110.7	110.8	111.8
Commodities Other Than Farm & Foods[7]	114.6	114.6	113.2

[1]Dates on request. [2]Preliminary. [3]Weekly capacities, net tons: 1953: 2,254,459; 1952, 2,077,010. [4]Federal Reserve Board. [5]Member banks, Federal Reserve System. [6]1935-1939=100. [7]1936-1939=100. [8]Bureau of Labor Statistics Index, 1947-1949=100.

machine tools were the highest so far this year, and fabricated structural steel orders in the same month were above the two previous months.

Appliance Output Gains . . .

With retail sales maintaining their former pace, production has started its autumn climb. Factory sales of most appliances during August rose above the July level. Purchases by dealers and others of standard household washers during the eighth month totaled 291,260 units, 27.6 per cent above the July level, the American Home Laundry Manufacturers Association says. More spectacular is the rise in factory sales of automatic tumbler driers. August sales of 70,774 units were up 112.6 per cent above July. Vacuum cleaner sales of 185,029 units were also above July. The increased vending was 16 per cent over the previous month. The main exception to the general trend occurred in the sales of ironers, which totaled only 8067 units in August.

Capital Spending Changes . . .

Looking further into the future, the National Industrial Conference Board says that 46 per cent of manufacturers plan to reduce their capital expenditures in 1954 below the present rate. Earnings will provide 62 per cent of the funds needed, whether or not the expenditures are above or below this year. Thus with capital spending down and earnings used for the greater part of expansion and improvement programs, the supply of money available for loans should increase.

Trends Fore and Aft . . .

Railroad freight loadings of 823,884 cars in the week ended Sept. 19 showed increases from the week before in all categories except ore loading, according to the Association of American Railroads . . . Bookings for industrial supplies and machinery in August were 139.6 per cent of the July, 1948, average, the lowest point of the year to date . . . August building permit values were $420.2 million.

Industrial Supplies & Machinery
New Order Index—1953
(July 1948 = 100)

Jan.	157.4	May	171.1
Feb.	172.9	June	160.0
Mar.	188.2	July	155.3
Apr.	182.1	Aug.	139.6

Source: American Supply and Machinery Manufacturers' Assn.

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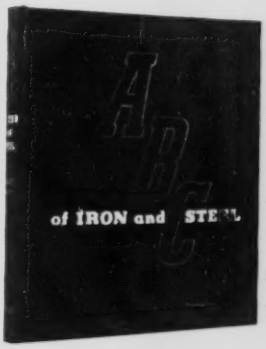

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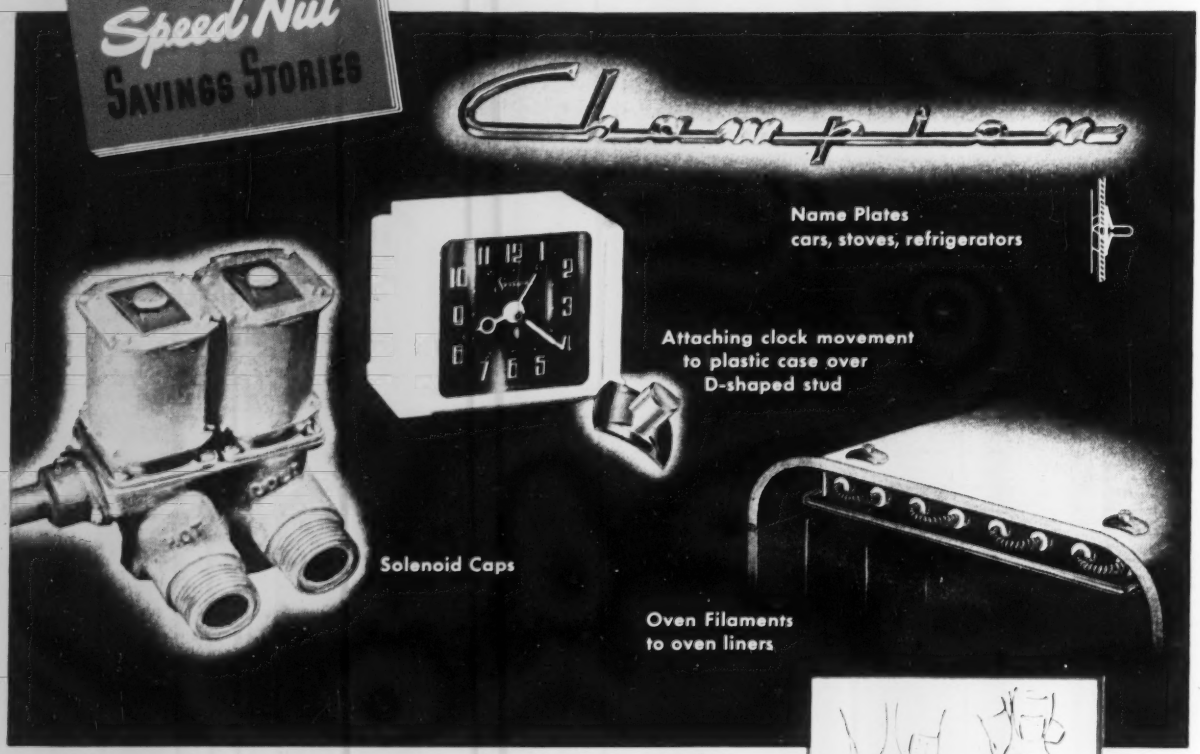

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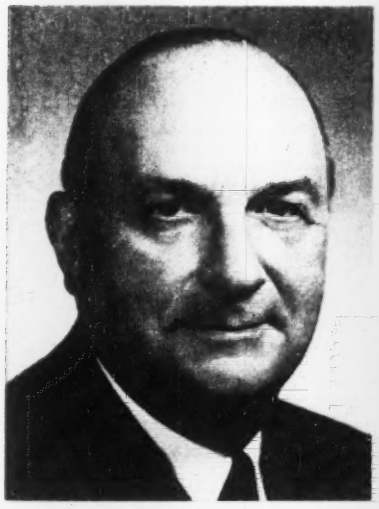

PAUL VAN WAGNER
. . . on corporate staff of Copperweld

Copperweld Steel Co. promoted **Paul Van Wagner** to vice president. In his new capacity he will be on the corporate staff with headquarters in Pittsburgh. He was vice president-sales, wire and cable division, at Glassport, Pa. He was also president of Copperweld Steel International Co. and continues in that post in addition to his new duties.

L. H. Geddes was named executive vice president of **Greenlee Bros. & Co.**, Rockford, Ill., and of its subsidiary, Greenlee Tool Co. **D. E. Hawkinson** was made vice president, Greenlee Bros., in charge of machine tool sales, and **R. J. Samuelson** vice president of Greenlee Tool in charge of tool sales. **R. O. Knudson** was made assistant sales manager, special metalworking machinery, and **C. P. Block** assistant sales manager, automatic screw machines.

Dr. Michael Ference Jr. was appointed chief scientist of **Ford Motor Co's** scientific laboratory at Dearborn, Mich. He was with the U. S. Army Signal Corps Engineering Laboratories where he served as chief scientist and technical director of Evans Laboratory in Belmar, N. J. He will supervise research in fields of physics, electronics, fluid dynamics and radiation.

MILTON F. LEPPER
. . . exec. v. p., Max Solomon Co.

Milton F. Lepper, since 1949 vice president in charge of purchases at **Max Solomon Co.,** Pittsburgh, was appointed executive vice president. Identified with the primary steel and scrap industries for the last 11 years, he joined Jones & Laughlin Steel Corp.'s purchasing department in 1942, serving as a ferrous scrap buyer for about five years. He joined Max Solomon Co. in 1947.

William L. Klinkenstein assumes the newly created post of vice president in charge of sales at **Palley Mfg. Co.,** Pittsburgh.

Precision Scientific Co., Chicago, elected **Chester A. Warner** chairman of the board. He is succeeded as president by **John J. Kinsella.** Mr. Warner succeeds the late **Walter W. Pitann,** founder and chairman. Other elections made **Arthur Pitann** vice president and secretary to replace Mr. Kinsella, **George E. Bader** and **Edmund E. Tice** vice president-manufacturing and vice president-finances, respectively.

Rollo W. Boring, sales manager, **Rolled Alloys Inc.,** Detroit, was elected vice president in charge of sales. **Robert C. Ford** was appointed territorial manager, located in Pittsburgh. He has served Carpenter Steel Co.'s alloy tube division for the last seven years.

NEWBOLD C. GOIN
. . . gen. mgr. at Benada Aluminum

Newbold C. Goin was appointed general manager, **Benada Aluminum Products Co.,** Girard, O. Formerly sales manager of the gearing division, Nuttall works, Westinghouse Electric & Mfg. Co., he became secretary-manager of American Gear Manufacturers Association in 1942.

Named to executive positions with **Marvel-Schebler Products Division,** Borg-Warner Corp., at Decatur, Ill., are **S. S. Meadows** as vice president and manager of its new transmission department, and **Glen Bamberger** and **Edward Walsh,** respectively, as works manager and assistant chief industrial engineer, carburetor and aircraft departments. Mr. Meadows was formerly works manager, Detroit Transmission Division, General Motors Corp. Mr. Bamberger was with Globe Stamping Division, Hupp Corp., and Mr. Walsh was with Globe Union Inc.

In the purchasing department of **Willys Motors Inc.,** Toledo, O., **L. K. Pollard** replaces **Gordon S. Yost,** resigned, as general purchasing agent, and **M. P. Williams** succeeds Mr. Pollard as chassis purchasing agent. **George L. Dible** becomes purchasing agent of standard and screw machine parts and **I. A. Degner** for machinery, plant equipment and perishable tools and also man-

ager of by-products plus all nonproductive purchases.

Frank W. Fletcher was appointed to represent **Farrell-Cheek Steel Co.** in the Nashville, Tenn., area, with headquarters in that city.

Richard C. Remmey Son Co. appointed **Eugene M. Lannes** sales service representative for the Toledo, O., area. He was formerly with Swindell Dressler Corp.

Vincent P. Gregg was made product planner for **General Electric Co.'s** specialty motor department, Schenectady, N. Y. Since 1951 he has been manager of purchasing, nonferrous metals, in the materials and purchasing department.

Gilbert Sherman was appointed Los Angeles electronic tube sales representative for **Westinghouse Electric Corp.**

J. B. Edwards rejoined **Douglas Aircraft Co. Inc.**, Santa Monica, Calif., engineering staff.

Victor F. Tripoli, former design engineer with Gaynes Engineering Co., joined the mechanism and dynamics department staff of **Armour Research Foundation**, Illinois Institute of Technology, Chicago.

Albert E. Merwin was made sales and technical service manager, **Lurium Aluminum Division**, Fromson Orban Co. Inc., New York. He was product manager, container division, Kaiser Aluminum & Chemical Sales Inc.

B. P. Gibbons assumes the newly created position of manager of material, and **Paul G. Osborn** as factory manager of Plant I at the San Diego, Calif., division of **Consolidated Vultee Aircraft Corp.** Mr. Gibbons was formerly chief of production control, and Mr. Osborn was superintendent.

E. B. Sulkoske, senior buyer for the Pittsburgh Equitable Meter Division, Rockwell Mfg. Co., was named purchasing agent for the Pellefontaine, O., plant of the company's **Delta Power Tool Division.**

Robert O. Baughman, formerly of the Heaveatex Corp., has been added to **Automotive Rubber Co.'s** Detroit organization in charge of its newly-enlarged rubber product development department.

C. NEIL NORGREN
. . . Norgren Co. v. p. and sec'y.

C. A. Norgren Co., Englewood, Colo., elected **C. Neil Norgren** vice president and secretary; **Aksel Nielsen** vice president and assistant treasurer; **Leigh H. Norgren** treasurer and assistant secretary and **Floyd R. Pool** assistant secretary.

H. C. Mathey and **Bicknell Lockhart** were elected vice presidents of **Liquid Carbonic Corp.**, Chicago. Mr. Mathey will be general manager of the Pacific division as well as president of Stuart Oxygen Division, continuing headquarters at Los Angeles. Mr. Lockhart, recently placed in charge of the durable goods manufacturing plant in Chicago, will continue in charge of those activities.

Axelson Mfg. Co. Division, Pressed Steel Car Co. Inc., Los Angeles, appointed **Bruce C. Elliott** as head of its newly formed market research department. He has been with the Axelson aircraft sales division since 1949.

Walter C. Thompson, formerly vice president-sales, was elected executive vice president, **Torrington Co.**, Torrington, Conn., to succeed **Alfred W. Burg**, retired after 37 years with the company. **Ray B. Nichols**, formerly president and general manager of Torrington Co. of Indiana, a subsidiary, was made vice president in charge of sales succeeding Mr. Thompson. He will have headquarters at Torrington and also continue as president of the Indiana company, where **Rodney T. Dunlap** becomes vice president and general manager. Other promotions at the South Bend plant include **John A. Toth** as assistant general manager and **Walter Fisher** as chief engineer.

Directors elected to the board of **Harris-Seybold Co.**, Cleveland, are **T. Keith Glennan**, president of Cleveland's Case Institute of Technology and former member of the Atomic Energy Commission, and **W. Ray Spiller**, Harris-Seybold's vice president for engineering.

Stanley J. O'Dea was named head of **U. S. Steel Corp.'s** Canton, O. roll and machine works' industrial relations department. **Robert P. Greenwood** is in charge of the engineering and industrial engineering departments of the Canton works.

K. T. Keller who went to Washington in August, 1950, to co-ordinate development of guided missiles in the armed services, has resigned to resume chairmanship of **Chrysler Corp.**

J. Paul Tierney was named assistant superintendent, **Youngstown Sheet & Tube Co.'s** rod, wire and conduit plant at Struthers, O. He succeeds the late **John D. Anderson.**

Whitehead Metal Products Co. Inc., New York, appointed **J. W. Bonnet** administrative assistant to the vice president; **J. J. Fitzgibbons** as manager of the foundry department handling Inco nickel and Vanadium foundry alloys; and **F. R. Valkenburg** as manager of the aluminum department handling Alcoa aluminum alloys.

Consolidation of sales divisions and marketing and research divisions of **Proto Tools**, Los Angeles, and all subsidiaries have been announced by the company. **Marvin S. Bandoli** will co-ordinate the new setup as vice president of sales, marketing and distribution.

George A. Davis was made New England sales representative of **Carpenter Steel Co.'s** alloy tube division, Union, N. J.

Clifford O. Richards was made purchasing agent of **Bonney Forge & Tool Works**, Allentown, Pa., to succeed **William H. Emrey Jr.**, who

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has left the company. Prior to joining Bonney, Mr. Richards was purchasing agent of the magnetic windings division of Essex Wire Co.

G. N. Dow was appointed Chicago district sales manager, **Leschen Wire Rope Division,** H. K. Porter Co. Inc. He transfers from the Detroit area, where he was district representative.

Donald W. Withrow joined **Electro Refractories & Abrasives Corp.,** Buffalo, as methods engineer.

C. Victor Mars was named vice president in charge of research and development for **Ansul Chemical Co.,** Marinette, Wis.

John G. Hamm was made manager of **Trane Co.'s** St. Louis sales office. For the last seven years he has been with the St. Paul sales office.

Hubert P. Berington succeeds **Stanley W. Parker,** retired, as district manager of the Chicago plant of **Wheelock, Lovejoy & Co. Inc.**

Arthur J. Whitcomb was made sales manager, Freyn Department, **Koppers Co. Inc.,** Pittsburgh. He was appointed manager of specialty sales for Freyn in 1951 and became assistant sales manager in 1952. In Kopper's coke plant department, **A. D. L. Orefice** was made chief engineer and **G. F. Ross** assistant chief engineer. **George P. Wilson Jr.** becomes manager, finance department, engineering and construction, in which division **Herbert A. Samler,** former control manager for the division's Freyn Department, assumes broader responsibilities as manager of the control section.

Chemical plants division, **Blaw-Knox Co.,** appointed **M. R. Wingard** sales engineer. He will be located at the western headquarters in Tulsa, Okla.

Joseph E. Lindsay, research engineer, was promoted to assistant manager, engineering service department, **National Radiator Co.,** Johnstown, Pa.

Harry Hariton will cover New York City, Long Island and northeastern New Jersey as sales representative of **Wagner Bros. Inc.,** Detroit.

C. A. WINDSOR
. . . Michigan Oven's wire equip. mgr.

Michigan Oven Co., Detroit, appointed **C. A. Windsor** manager of its wire equipment division. For 20 years connected with insulated wire and industrial heating engineering, Mr. Windsor spent five years with Belden Mfg. Co. and the last seven with Western Electric Co. in wire enameling.

Hubbell Metals Inc. appointed **Leland W. Kuhn** district manager in Kansas City, Mo. Associated with the firm since 1928, he was appointed vice president in 1938. Mr. Kuhn succeeds **Carl D. Garfinkel,** who moves to the home office in St. Louis to act as a special representative.

Theodore W. Rundell was appointed vice president in charge of operations at **Servel Inc.,** Evansville, Ind. He has held the position of vice president-engineering since 1952. In the purchasing department, **Byron Getman** was promoted to supervisor of purchasing follow-up and **Louis R. Smith** buyer of fabricated metal parts, washers, chemicals and outside plating.

Matthew M. Gouger was elected vice president and director of personnel relations of **General Aniline & Film Corp.,** New York.

James H. Bly was appointed research director of **X-Ray Inc.,** Detroit. He was formerly supervisor of radiography and electronics in the materials control laboratory of Pratt & Whitney Aircraft.

ERNEST NUBER
. . . Bristol's instrument div. sales mgr.

Ernest Nuber was appointed sales manager of **Bristol Co.'s** instrument division. He joined the firm's sales engineering organization in 1929 and in 1948 became manager, application engineering department. Mr. Nuber continues to maintain headquarters at the company's main office at Waterbury, Conn.

John E. MacArthur was appointed superintendent of general stores and tool cribs at AC Spark Plug Division, **General Motors Corp.,** Detroit. He succeeds **Harold Kelly,** transferred to the Allison Division in Indianapolis, where he heads the tool procurement section, purchasing department.

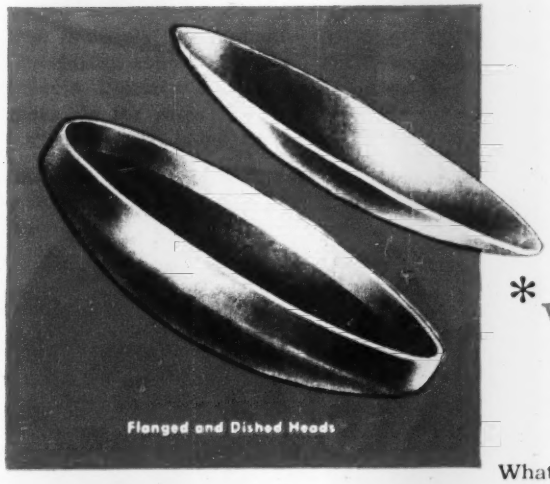
C. C. Hurlburt joined the welding division of **P. R. Mallory & Co. Inc.,** Indianapolis. Associated with the aircraft industry for many years, he has recently served as chief standards engineer for Piasecki Helicopter Corp.

Willard W. Brown, assistant to the president of **Clevite Corp.,** Cleveland, was appointed director of marketing for the corporation.

Lyle H. Doering was added to the board of directors and appointed a vice president of **Frost Steel & Wire Co. Ltd.,** Hamilton, Ont.

Thriftmaster Products Corp., Lancaster, Pa., announces resignation, effective Nov. 1, of **Walter E. Dorman** as general sales manager for its line of drillheads and tapping attachments. He will be dis-

heads---you win



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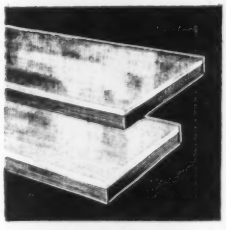
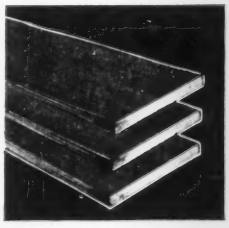
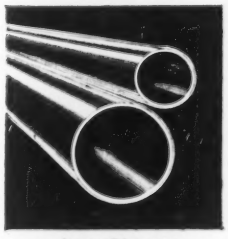


Stainless-Clad Steel Plates



Alloy and Carbon Steel Plates



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How ONE TOOLMAKER . . .

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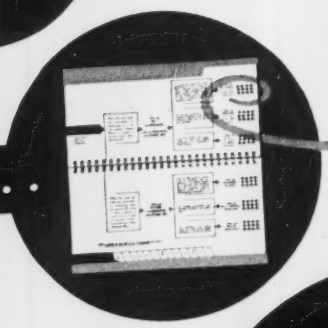
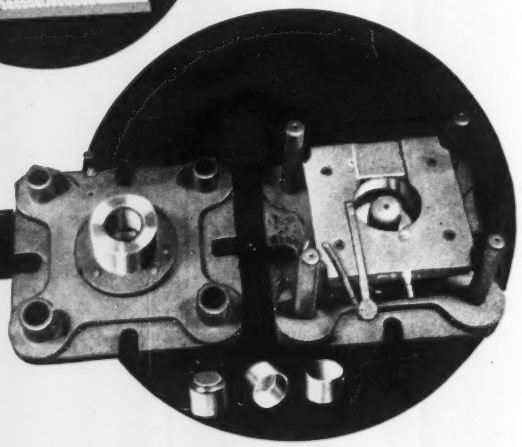


TO HOLD DOWN UNIT COSTS . . .



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Job:
Compound Blank and Draw Die for forming .031", ¼-hard brass Vent Valve Bodies at the rate of 103 per minute on a punch press.

Problem:
Unit costs were on the upswing because the old dies wore too rapidly, causing frequent and costly machine shutdowns for regrinding.

Solution:
Looking for a die steel with maximum wear resistance, the toolmaker referred to the Selector Section in the Carpenter Matched Tool Steel Manual, and quickly arrived at Carpenter *Hampden* (Oil-Wear).

Heat Treatment:
Simplified instructions in the Manual were followed.

Results:
2 hours of costly machine downtime were eliminated *each day*—production per grind *rose over 300%!* As a matter of interest, the toolmaker takes off approximately .0005" per stoning and gets about 100 grinds from the Blank and Draw Die.

IMMEDIATE DELIVERY FROM LOCAL STOCKS!

Call Your Nearest Carpenter Warehouse or Distributor

Carpenter

Matched Tool and Die Steels

Export Department: The Carpenter Steel Co., Port Washington, N. Y.—"CARSTEELCO"

Mill-Branch Warehouses and Distributors in Principal Cities Throughout the U. S. A. and Canada

tributor of Thriftmaster products in New York and New Jersey metropolitan areas, operating as Dorman Tool Co.

Nelson C. Walker is director of manufacturing for all plants of **Mechanical Handling Systems Inc.**, Detroit. He goes to MHS from the post of general manager of American Car & Foundry Co. at Berwick, Pa.

Heil Process Equipment Corp., Cleveland, appointed **Richard F. Protvia** district sales engineer responsible for sales in the eastern portion of the home territory.

George White Jr. was elected executive vice president, **Vitro Corp. of America**, New York.

Theodore E. Burleigh of Winchester, Mass., was made a sales engineer, equipment division, **National Research Corp.** He was formerly with Kinney Mfg. Co.

Gerald R. Cox is sales representative in northern California and Nevada for the heating products of **National Radiator Co.** He has headquarters at San Francisco.

Korhumel Steel & Aluminum Corp. of Wisconsin, Milwaukee, announces promotion of three of its sales representatives. As of Oct. 1, **James Chisholm** became manager of aluminum sales, **John Wiggin** traveling representative covering Racine and Kenosha counties and **W. J. Duyser** covering the central counties of Wisconsin.

Walter H. Douglas will represent **Cone-Drive Gears Division**, Michigan Tool Co., in northern New Jersey, northeastern Pennsylvania, downstate New York and the New York City area. His headquarters will be at Mountainside, N. J.

RICHARD S. MOORE

C. A. BRASHARES

. . . assistant general sales managers at Harbison-Walker Refractories Co., Pittsburgh
Noted in STEEL, *Sept. 14, p. 86*

Percy L. MacGowan is Chicago district engineer for **Youngstown Sheet & Tube Co.** He succeeds **H. C. Williamson** who retired some time ago.

John H. Smedley joined the **Carboloy Department** of General Electric Co. at Detroit as design and application engineer in the permanent magnet products design and application section.

Donald Chandler joined the sales force of **Lufkin Rule Co.**, Saginaw, **Mich.** He will be located in the Chicago area.

Don H. Smith was named sales promotion manager, **Kaiser-Willys Sales Division**, Willys Motors Inc., Toledo, O.

Simplex Valve & Meter Co. appointed **Ralph N. Cramer** service engineer with headquarters in Columbus, O., to handle service engineering requirements in Ohio, lower Michigan, western Pennsylvania, western New York, Kentucky and Tennessee.

Joseph N. Kuzmick was appointed co-ordinator, corporation research and development by **Raybestos-Manhattan Inc.**, with headquarters at Passaic, N. J. He has been with the Manhattan Rubber Division.

In reorganization of manufacturing operations at **Westinghouse Electric Corp.'s** lamp division, Bloomfield, N. J., the following appointments are announced: **James E. Woodall** was made manager and **William J. Williams** manager of manufacturing engineering. **Elwood W. Noxon** is manager of northern plants, succeeded by **Charles T. Nichols** as manager of southern plants.

OBITUARIES . . .

Clarke T. Morse, 64, for the last 20 years president of **American Blower Corp.**, Detroit, died Sept. 18. He also was president of Canadian Sirocco Co. Ltd., Windsor, Ont., and director and executive board member of the parent company, American Radiator & Standard Sanitary Corp.

Walter M. Skillman, 55, manager of marketing administration, radio and television department, **General Electric Co.**, at Syracuse, N. Y., died Sept. 15.

Irving C. Ralph, 53, midwest salesman for **American Brass Co.**, Chicago, died Sept. 20.

Emiel De Frew, 53, vice president, **J. J. Tourek Mfg. Co.**, Chicago, died Sept. 22.

Dora Ostroff, 41, president of **Thomas Paulson & Son Inc.**, Brooklyn, N. Y., and first woman secretary and treasurer of Metropolitan Brass Founders Association, died Sept. 20 in Paris while attending the International Foundry Congress.

Rudy L. Schlenzig, 62, secretary, **C. Hennecke Co.**, Milwaukee, died Sept. 16. He had been with the structural steel firm for 30 years.

George H. Rowbottom, 86, founder and president, **Rowbottom Machine Co.**, Waterbury, Conn., industrial machines, died Sept. 21.

More Scientists Sought

Westinghouse and Mackintosh-Hemphill sponsor programs to alleviate acute shortage

SHORTAGE of scientists is still acute. The annual quest for youngsters deemed the most promising for future careers in science was begun recently as high school seniors were invited to compete in the 13th annual Science Talent Search. Next spring 40 finalists will go to Washington to compete for a total of $11,000 in science scholarships to be awarded by Westinghouse Educational Foundation, which is supported by Westinghouse Electric Corp., Pittsburgh. The search is conducted by Science Clubs of America, administered by Science Service.

Praises Program—Dr. Leonard Carmichael, secretary of the Smithsonian Institution, Washington, said: "For a number of years I have had something to do with the listing and classification of our nation's scientists. The manpower problem is far more critical than that of filling our need for armed service personnel. The Science Talent Search is an invaluable aid in helping boys and girls to select and be educated for their chosen fields in the world of science."

Mackintosh-Hemphill Co., steel mill roll and machinery manufacturer, also is doing something about the shortage of engineers. This concern is helping two of its employees to attend the University of Pittsburgh's School of Engineering & Mines, under a co-operative work-in-industry program.

The student employees will go to school 10 hours each week and work 30 hours at various jobs in the company's plants. At the end of three years, they will be eligible for certificates of engineering fundamentals from the university. The company ultimately pays the tuition if the student successfully completes the first three years of the program.

After three years, they can either discontinue their schooling or they can go on to earn their Bachelor of Science degrees in a particular branch of engineering mechanical, metallurgical, civil, or electrical. Total time required for an engineering degree is about 6½ years under the program and, if successfully completed, Mackintosh-Hemphill pays the tuition.

"If the program is successful," says Fred C. T. Daniels, Mackintosh-Hemphill vice president, metallurgy and research, "we hope to encourage other deserving young men to enter the engineering profession."

Fuller Buys Shuler Axle Co.

Fuller Mfg. Co., Kalamazoo, Mich., acquired all of the capital stock of Shuler Axle Co., Louisville. Fuller is expected to operate Shuler Axle as a subsidiary. Both firms manufacture components for trucks and off-highway vehicles.

Berger Appoints Distributor

Republic Steel Corp.'s Berger Mfg. Division, Canton, O., appointed Northern Ohio Appliance Corp., Cleveland, as distributor of its steel kitchens in that territory.

Link Builds Plant Addition

Ground has been broken for a $335,000 addition to the Link Aviation Inc. plant in Hillcrest, N. Y.

A Soft Touch

Zachary Rudenko, who is able by rubbing his hand over the surface of a die to double check its smoothness to within 0.0005 of an inch, is shown working on a die at Chrysler Corp.'s DeSoto plant in Detroit. His skilled sense of touch is almost as accurate as the mechanical devices he uses

This is part of the firm's long-range expansion program. New facilities are expected to be occupied by the first of the year. The addition will give the firm about 20 per cent more floor area.

Will Build Tin Can Plant

Vulcan Containers Ltd., tin can manufacturer, purchased a site near Toronto, Ont., where it will erect a manufacturing plant. Initial production is expected to begin in the fall.

Metal Products Firm Expands

Chicago Powdered Metal Products Co. is building a 10,000-sq-ft plant at Schiller Park, Ill. Occupancy is scheduled for Dec. 1.

Morse Names Agent

Morse Chain Co., Detroit, appointed Abrasive & Supply Co. that city, as an additional distributor of the company's mechanical power transmission products in the Detroit area.

Equipment Firm Changes Name

Topper Equipment Co., Clark township (Rahway), New Jersey, changed its corporate name to Circo Equipment Co. The company makes vapor degreasers and other metal cleaners and solvents. The company is pioneering in the production of equipment for ultrasonic cleaning.

Zirconium Plant Opened

Carborundum Co.'s new plant in Akron, N. Y., has gone into operation and is reported ahead of schedule in the production of zirconium for the Atomic Energy Commission. Carborundum is reported to have about $11 million in orders to supply the rare metal over a five-year period.

Tool Works Enlarges Plant

Niagara Machine & Tool Works Buffalo, is erecting steel work for a large building addition, made necessary because of changes in production methods and to improve efficiency. An official of

(*Please turn to Page* 79)

"144,000 of our employees are enrolled in the Payroll Savings Plan"

C. F. HOOD
President, United States Steel Corporation

"The response of our employees to the Payroll Savings Plan for U. S. Savings Bonds is dramatic evidence of their conviction that Freedom is Everybody's Job. We are proud of their outstanding record in saving systematically in "E" Bonds, in thus adding to their financial independence as they give effective support to the nation."

Mr. Hood and his associates may well be proud of the Steel Corporation's Payroll Savings figures:

- 144,000 men and women of U. S. Steel are enrolled in the Payroll Savings Plan—an over-all employee participation of 52%—excellent for a company as large as U. S. Steel.
- the average monthly investment of a U. S. Steel Payroll Saver is $20.79.
- every month, these 144,000 employees invest $2,993,760 in personal security—and America's economic stability.
- in some U. S. Steel plants and subsidiaries employee participation runs as high as 80%.

Nearly eight million men and women, in forty-five thousand companies, large and small, are building personal security and contributing to national economic stability by their $160,000,000 monthly investment in U. S. Savings Bonds. These Payroll Savers, with their $25 and $50 Bonds, are major shareholders in a huge reservoir of future purchasing power—the $35.5 billion, *cash value* of Series E Bonds outstanding.

What is the employee participation in *your* Payroll Savings Plan? The average monthly deduction? How many employees have been *added* to your Payroll Savings Plan in the last year? Call for the figures and study them. Then, phone, wire or write to Savings Bond Division, U. S. Treasury Department, Washington Building, Washington, D. C. Your State Director will be glad to show you how easy it is to raise employee participation in your plan to 60%, 70%, or even better.

The United States Government does not pay for this advertising. The Treasury Department thanks, for their patriotic donation, the Advertising Council and

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The Weekly Magazine of Metalworking

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with

WHEELABRATOR®

Airless Blast Cleaning

BRACE ,INC. tried various air blasting methods for cleaning its small investment castings before they finally settled on Wheelabrator cleaning. The cost of sand blasting on a typical part was 3c to 4c each while the cost of Wheelabrating is only .0045c.

Mr. C. H. Brace, President, says:
"We feel confident that the Wheelabrator Tumblast has reduced our cleaning costs between 60% and 70% and in some instances considerably more. The Tumblast has also saved us considerable time with superior surface cleanliness."

WHEELABRATOR SOLVES CLEANING PROBLEMS LIKE THESE

ELIMINATES GRINDING, BUFFING AND POLISHING ON WELDMENTS

Costly manual grinding, buffing and polishing operations were eliminated in the manufacture of fabricated parts for Caterpillar earthmovers by the thorough surface cleaning of a Wheelabrator.

REMOVES HEAT TREAT SCALE IN 1/3 THE TIME

A Wheelabrator replaced airblast operations at Fairfield Manufacturing Co. and now cleans the same quantity of work in 1/3 the time. The Wheelabrator eliminated a production bottleneck by its high-speed removal of heat treat scale.

CLEANS 20 TONS OF CASTINGS FOR COST OF 6 TONS

A Wheelabrator Swing Table cleans 20 tons of castings at Toronto Foundry Co., Ltd. at the cost of 6 tons by former methods. It cut cleaning costs 76%, saved 10% in machining costs, eliminated breakage and reduced scrap loss.

WHEELABRATOR HAS UNLIMITED APPLICATIONS

It has been profitably applied to such diversified applications as descaling steel strip and sheets and deflashing plastics. What problem can it solve for you?

Write today for information.

American
WHEELABRATOR & EQUIPMENT CORP.
509 S. Byrkit St., Mishawaka, Ind.

Wheelabrator®
AIRLESS BLAST CLEANING

(Continued from Page 76)

the company reports that operations continue at a high level, with a slight increase in civilian work offsetting a drop in defense orders.

Chase Building Warehouse

Chase Brass & Copper Co. Inc. is constructing a $600,000 office building and warehouse on Washington boulevard, Santa Ana, Calif.

Marion Appoints Distributors

Marion Power Shovel Co., Marion, O., appointed as its distributors: Tulsa Equipment Co. Inc., Tulsa, Okla.; and Neff-Thomas Machinery Co., Miami, Fla.

Rod Cutting Co. Changes Name

Rod Cutting Co., Cleveland, changed its name to Cayce Corp. The firm makes screw machine products.

To Build Testing Laboratory

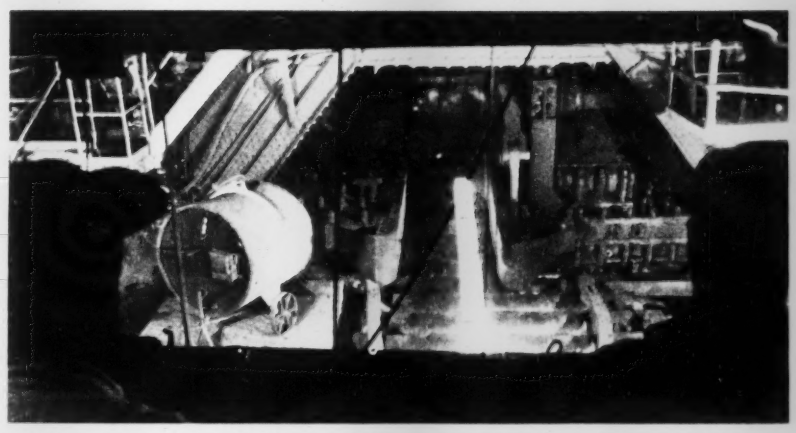
Lapp Insulator Co., Le Roy, N. Y., plans to erect a laboratory building for testing high voltage insulators. It will be located opposite the company's main plant and adjacent to the new machine shop.

Plant Opening Scheduled

Production of some minor items in the $2 million Keyser Valley plant of Pacific Electric Mfg. Corp., division of Federal Electric Products Co., Scranton, Pa., is expected to begin around the end of October. Construction of the Keyser Valley plant near Scranton is about 90 per cent complete. Machinery is ready for delivery. C. F. Jensky is plant manager of the Scranton division.

Follansbee Gets Contract

Pittsburgh Ordnance District, in the hope of cracking a tough production problem, awarded a $1,687,000 contract to Follansbee Steel Corp., Pittsburgh, for the manufacture of more than 1 million 50-caliber ammunition boxes. They will be made in the firm's sheet metal specialty plant at Follansbee, W. Va. Two production specialists will take a two-week course in automatic seam welding technique at Progressive Welder Sales Co., Detroit. The latter company is supplying $130,000 worth of welding equipment for the project.



Electric Drive Replaces Blooming Mill's Steam Engine

This photo was taken from the "pulpit," or control tower, of Jones & Laughlin Steel Corp.'s blooming mill at its Aliquippa, Pa., Works. An all-electric drive in a virtually new mill was installed last month in record time. The retired steam-driven mill holds the world's record for the number of 5-ton ingots rolled in one 8-hour turn. It rolled 522 ingots in March, 1949. Other records set in that month by this champion mill are: 77 ingots in 1 hour; 6538 tons in 24 hours; 42,205 tons in 1 week; and 183,728 tons in 1 month

Equipment Firm Leases Space

Cockshutt Farm Equipment Inc., Brampton, Ont., leased 38,000 sq ft of floor space in New York Mills, N. Y., which will be used for warehousing operation.

Cleaver-Brooks Names Agent

Cleaver-Brooks Co., Milwaukee, appointed D. E. McCulley Co., Omaha, Nebr., as representative for the sale of its boiler equipment. Cleaver-Brooks Co. manufactures equipment for the generation and utilization of heat. Among its other products are commercial and industrial burners, evaporators, distillation equipment, bituminous heating equipment, and centrifugal and axial flow compressors.

Clark Moves Atlanta Office

John J. Shand, southeastern regional sales manager of Clark Equipment Co., Buchanan, Mich., moved his headquarters to 161 Spring St., Atlanta. Clark manufactures industrial forklift trucks, towing tractors, straddle carriers and other materials handling equipment.

Sylvania Plans Western Plant

Sylvania Electric Products Inc., New York, will construct a plant for manufacture of television tubes in Fullerton, Calif.

Wood-Mor Products Expands

Wood-Mor Products Co., Rochester, N. Y., maker of aluminum garden furniture, is undertaking its third expansion in three years. Samuel D. Curro, executive vice president, says the company will close its Railroad avenue plant and take over three buildings adjacent to its Lyell factory, making a total of 45,000 sq ft of floor space.

Crosley Gets Subcontract

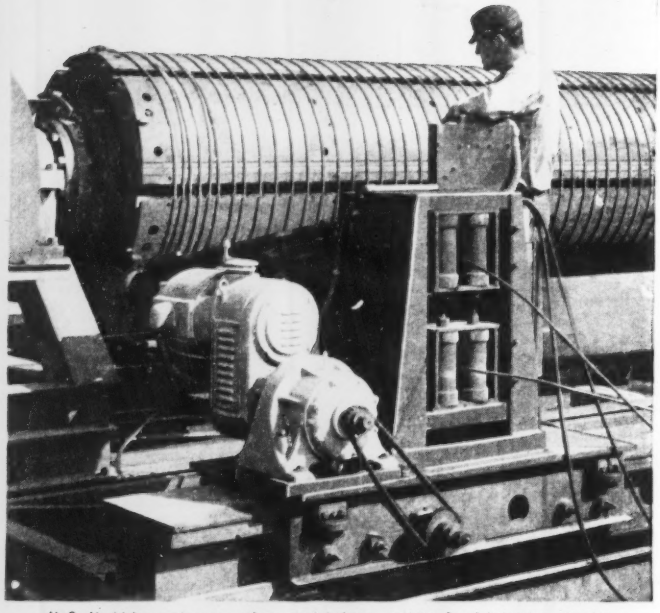
First major subcontracts for production of the giant C-130 turbopropeller military transport, to be built for the Air Force by Lockheed Aircraft Corp. at the Georgia Division, Marietta, Ga., went to the Crosley Division, Avco Mfg. Corp., Cincinnati, for the complete tail assemblies. Other

(Please turn to Page 82)

(Advertisement)

THIS MONTH'S MOTOR TIPS

How Variable Speeds *improve production tempo*



U. S. Varidrive motor operating special drum machine for fabricating circular reinforcing cages for concrete pipe; permits speed variation to suit each diameter of wrapping.

COUNTLESS PLANTS ARE SWITCHING TO VARIDRIVE MOTORS FOR OUTPUT EFFICIENCY

MAKING machines more responsive to the operator's command has resulted in an amazing step-up in production. Machines powered with conventional constant-speed motors "loaf on the job" during many operations, but the same machines driven with Varidrive motors can accomplish one or a combination of these improvements—(1) increase production by the adjustable "overdrive" of accelerated speed; (2) effect better cutting or operating action by setting speed at the precise rpm essential for the job; (3) provide the operator with infinite speeds to coordinate with his rhythm of movement or selection of speed that is, in his judgment, just the exact rpm to produce his best workmanship.

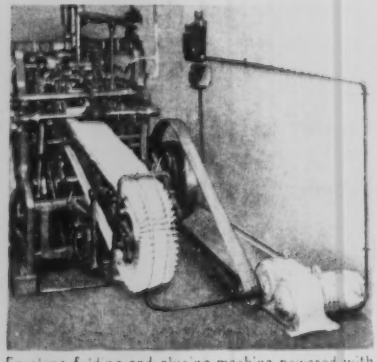
Just as an automotive engine operates at highest efficiency at a certain speed, almost any production machine, or powered equipment will produce more where selectivity of motor speeds is provided. In a study of advantages created by the use of variable speeds, the manufacturers of U. S. Varidrive motors have compiled a list of applications covering diversified fields ranging from sewing machine factories to sorghum mills. From most of these interesting applications the design engineer and plant production engineer can learn of uses they can apply to their own sphere of operations.

NO GUESSING OF MOTOR SPEED

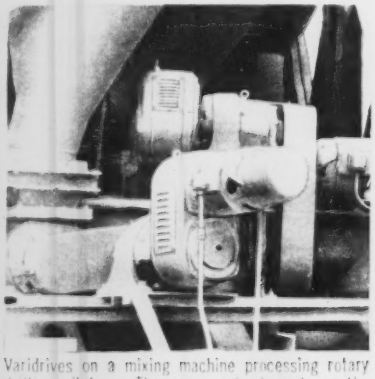
For instance, the design engineer doesn't have to try to guess what the ultimate speed factor will be in order to be sure his machine will deliver the full optimum of production *after* installation. By installing a Varidrive motor he endows his product with speeds instead of a speed; consequently in service his machine presents an "ableness" to adapt itself to a wide range of conditions far beyond his contemplation. If a fixed speed motor operates the machine the design engineer might have guessed wrongly the speed to give it.

REMOVING RESTRICTIONS OF SPEED

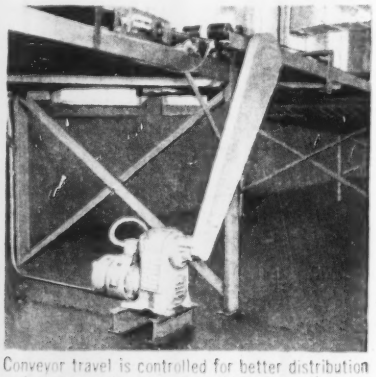
The plant production engineer need not be restricted to a set operating speed of a machine. He can, with the Varidrive, experiment with speeds to do a specific job best. For example, a conveyor may at times, when heavily loaded, require slow speed, then higher speed when the load is light, or when parts have to get to a worker's location



Envelope folding and glueing machine powered with U. S. Varidrive. For different sizes of envelope a different speed is required.

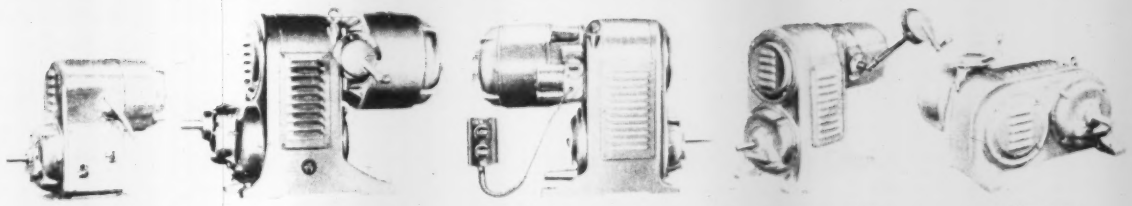


Varidrives on a mixing machine processing rotary drilling oil base. The proper mix depends on the exact speed required to blend materials.



Conveyor travel is controlled for better distribution and timing with a Varidrive. This conveyor is an automatic system for drying printed material.

TYPICAL VARIDRIVE MOTOR TYPES



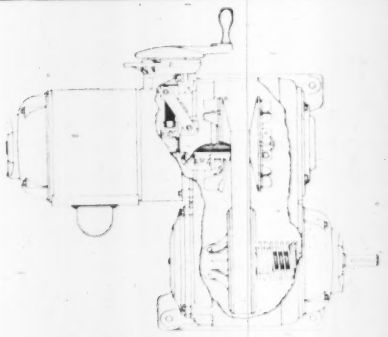
TYPE VA—SMALL H.P.
Low cost model, ¼ to ¾ h.p. 4 to 10,000 rpm. Ratios 10:1. 1 & 3 phase.

TYPE VEU—GH
Upright case with low shaft. Control dial on side.

ELECTRIC CONTROL
Varidrive with Type ERC heavy duty remote control motor.

REMOTE CONTROL
One of many control arrangements. Control shaft can be extended.

TYPE VE
Horizontal case with control dial on top of motor.



OPERATION OF A VARIDRIVE

By turning control dial, the diameters of the belt discs expand or contract, thus changing fixed speed of motor shaft to variable speed of the take-off shaft. Quiet, shockless, enclosed transmission.

●

faster. In cutting shafts on a lathe from large to small diameter, frequent change in speed keeps the power tool operating at a uniform lineal travel to get the job completed in the least time. With a Varidrive, the speed can be instantly changed to synchronize with each specific travel or load condition.

Machines turning out different sizes of parts can produce better with variable speeds. If work chatters, feed can be adjusted for best surface speed, longer tool life and finer workmanship.

In experimental processes involving mixing in vats under varying conditions of viscosity, temperature, homogenization or rate of agitation, variable speed plays an important role, which is impossible with a fixed speed motor. The right speed makes all the difference in getting the right mix. With Varidrive no step-cone pulleys, external gears, intermediate speed changers or connections, such as extra chains and couplings are needed. Usually a Varidrive can be direct connected to the prime driving shaft of the machine or equipment.

In pumping and hydraulic control operations variable speed is the answer. Flow, pressure, suction and load can be maintained at just the right equilibrium by a Varidrive. In some machines the exasperating problems of noise, chatter, vibration, over-heating and pulsation contribute to the shortened life of equipment, or affect the quality of the product undergoing processing. These troubles can be invariably "cured" with a Varidrive because the operator can experiment down to a split rpm to get the most sensitive speed to overcome the trouble.

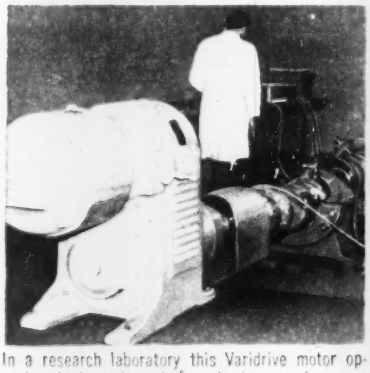
SPEEDS TO FIT TIMING FACTORS

Equipment is frequently required to complete an operation in predetermined time. Variable speed permits a step-up or step-down to establish the right production tempo. In controlling cycles of infra-red baking, drying, heating, soaking, grinding, capping, tumbling, coating, plating, etc., speed movement must be precise—or rejects will cut into profits. What, then, is more logical than to install a Varidrive to provide the nerve-center of speed regulations?

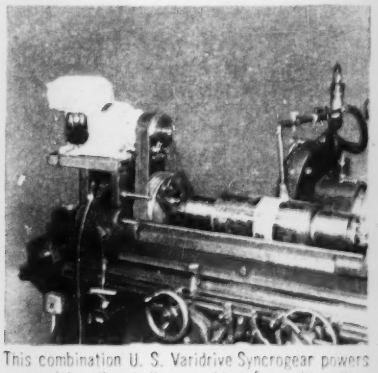
IMPROVEMENT IN OUTPUT

In thousands of plants, the U. S. Varidrive motor has brought about amazing improvements in production. Powered machines have had their output stepped up to 30 percent or more in innumerable instances.

In general, these Varidrives can be obtained in a range of from ¼ to 50 h.p., and for speeds from 2 to 10,000 rpm in ratios of 10:1.



In a research laboratory this Varidrive motor operates test equipment for checking performance characteristics of water pumps.



This combination U. S. Varidrive Syncrogear powers a special roll grinding machine for cold rolling aluminum sheets, from heavy to light gauge.

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16-Page Motor Booklet

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72 Pictures
22 Models

Tells all about

U. S. VARIDRIVE MOTORS

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Send free 16-page Booklet. No obligation

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Research Cuts Costs

Devising of refinements that will increase mass production is the job of Boeing Airplane Co.'s manufacturing research unit. Two engineers of the unit are shown above inspecting a machine that had been modified to put accurate bends in thin wall tubing

(*Continued from Page* 79)

subcontractors include Rohr Aircraft Corp., Chula Vista and Riverside, Calif., for turboprop engine "power packages."

Western Electric To Build

Western Electric Co. will build a plant at North Andover, Mass., construction to start late this year on a 150-acre site. Operations now conducted in leased space at Haverhill and Lawrence, Mass., will be moved into the new plant, although the company-owned unit at Lawrence will be utilized.

Penn Scientific Names Agent

Penn Scientific Products Co., Philadelphia, appointed Mosher Industrial Supply Co., Chicopowee, Mass., as distributor of its diamond lapping compounds, wheel laps and wheel dressing tools.

Aeronca Mfg. Leases Space

Aeronca Mfg. Corp., Middletown, O., is leasing 30,000 sq ft of manufacturing space in Miamisburg, O., for expanded operations, plus 15,000 sq ft of storage space. John Lawler, president, said production is expected to start around the first of the year.

Keystone Chromium Expanding

Keystone Chromium Corp., Buffalo, has an option on 8½ acres of industrial property at Hertel avenue and Military road for expansion. Harold Karet, president, says plans call for using the present buildings on the new site and adding to them. "We may be able to move our present plant to this location eventually," he added. The company has been licensed to use a process for the deposition of nickel on metal which does not require the use of electrolytic equipment.

Machinery Firm Changes Name

Multi-Matic Corp., Van Nuys, Calif., is the new name of Eugene John Freeman & Co., Van Nuys, Calif., manufacturers of hole-digging and tunneling tools and machines. The firm completed construction of a plant at 14741 Bessemer St., Van Nuys.

Master Vibrator Co. Moves

Master Vibrator Co., Dayton, O., is transferring machinery from its plant at 108 Davis St., to a new location at 1752 Stanley Ave. The firm has a 40-year lease on the structure. Master Vibrator makes small construction equipment.

Dunn Steel Building Plant

Dunn Steel Division, Townsend Co., is constructing a plant at the firm's Plymouth, Mich., headquarters. The project, to cost about $500,000, will increase the division's capacity to produce special cold-headed fasteners for the automotive industry, says F. R. Dickenson, president.

Ingersoll Names Distributor

Ingersoll Products Division, Borg-Warner Corp., Chicago, appointed Daymel Co., Chicago, as a distributor of its aluminum storm windows and doors.

Trailer Plant To Open Soon

Imperial Mobile Homes Co., producer of mobile homes of the trailer type, will begin operations soon at a new plant in Wilkes-Barre, Pa. The first trailer is expected to come off the assembly line by Nov. 1. Plans call for output of an average of 25 units a week.

Plans Rolling Mill in Canada

A British firm, Ratcliffs (Canada) Ltd., purchased a 10-acre site in Richmond Hill, Ont., and will establish a rolling mill there. The plant will specialize in rolling strips of copper and brass for manufacturers, who in turn process the strips into finished products. The new building is scheduled for completion by Christmas, and a further extension of the plant is expected by next February.

Dixie Mfg. To Build Plant

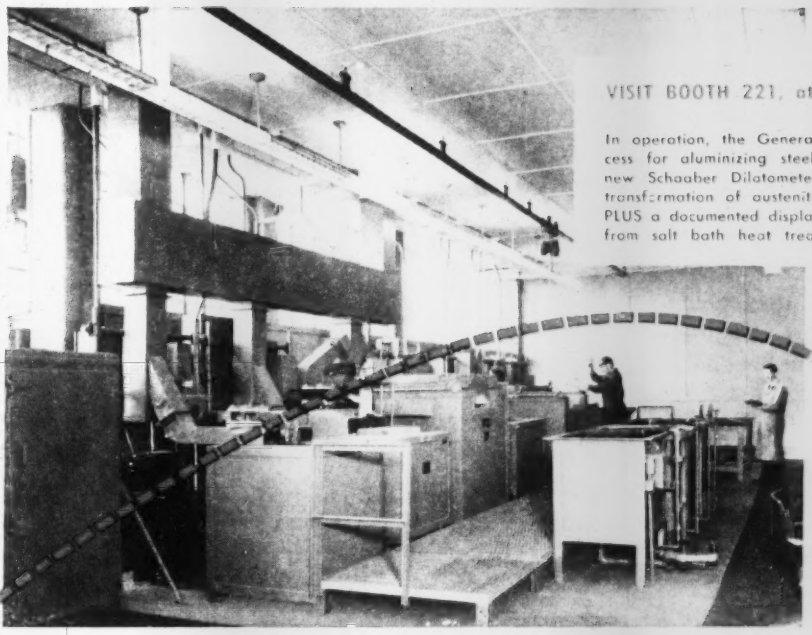
Dixie Mfg. Co. Inc., Baltimore, manufacturer of dust collecting systems for industrial plants, acquired a site at Patapsco avenue and the Washington-Baltimore expressway for a plant containing 30,000 sq ft. An office building, containing 5000 sq ft, also will be built. Facilities will be much larger than the present plant.

Farm Machinery Firms Merge

Merger of two farm machinery firms in Leonardsville, N. Y., was announced by a group which has acquired them. Lovell Shockey, president of Dunham Co., Berea, O., a member of the purchasing group, said the Eureka Mower Co. and the Babcock Mfg. Co. had merged into a new corporation.

Tool and Diemakers Meet

Southern California Tool & Die Association, Los Angeles, sponsored a meeting at which officials pointed out the contributions of the tool and die industry to our industrial economy. Over 400 persons, including representatives of metalworking firms, trade associations, the press and civic and military officials attended the meeting. A special showing of a motion picture, "Tool and Diemaking: The Keystone of New Products," demonstrated the importance of tool and diemaking in production and underscored the value of



VISIT BOOTH 221, at the Metal Show

In operation, the General Motors ALDIP process for aluminizing steel products; also the new Schaaber Dilatometer for measuring the transformation of austenite in salt baths . . . PLUS a documented display of production parts from salt bath heat treating installations.

Say Goodbye to Guesswork

ON HEAT TREATING RESULTS AND COSTS!

Without charge or obligation, the Ajax Metallurgical Service Laboratory will treat specimen parts by any of the following processes:

ALUMINIZING
CARBURIZING
CYANIDE HARDENING
NEUTRAL HARDENING
ANNEALING OR HARDENING STAINLESS STEEL
BRAZING
HARDENING HIGH SPEED STEEL
AUSTEMPERING
MARTEMPERING
PROCESS ANNEALING
CYCLIC ANNEALING
SOLUTION HEAT TREATMENT
DRAWING (Tempering)
DESCALING, CLEANING
DESANDING

What about the quality of the finished work? Will it be scale-free, devoid of decarb? Will the heat treatment prevent distortion and thereby reduce or eliminate costly grinding or finish machining operations? How much production will the furnace give per hour, and what floor space will be needed? What will the power, labor, maintenance and other heat treating costs amount to? In short, will your proposed new furnace live up to the manufacturer's enthusiastic claims for it?

You can be absolutely sure on all of these points before you buy an Ajax Electric Salt Bath Furnace for these reasons:

1—No Ajax salt bath furnace is ever sold until Ajax engineers—backed with experience in over 4,000 installations—are convinced it will do the job to your entire satisfaction *as well as to theirs*.

2—Before buying, we strongly urge that you utilize the facilities of the full commercial scale Ajax Metallurgical Service Laboratory. Send or bring batch lots of your materials for heat treating under actual working conditions. Let us prove beyond any question of doubt what can be done, how it can be done, and under exactly what conditions.

3—Once your furnace is installed, an Ajax engineer will visit your plant to double check, to instruct, and to make sure that on-the-job operation fully matches your expectations.

This policy has resulted in the most outstanding patronage ever accorded any heat treating furnace, both in the importance and number of users. A list of users is available on request. The high percentage of customers who have re-ordered Ajax heat treating equipment is unparalleled in the furnace industry.

AJAX ELECTRIC COMPANY, Inc.

World's Largest Manufacturer of Electric Heat Treating Furnaces Exclusively

952 Frankford Ave. Philadelphia 23, Pa.

SELF-REVERSING ● SELF-CIRCULATING

AJAX HULTGREN ELECTRIC SALT BATH FURNACES

apprentice training to replace the depleted reservoir of skilled tool and diemakers. Officers of the association are: M. C. Alu, Falco Machine & Tool Co., president; Russell Lamb, Toolmatic Co., vice president; Harold Murdock, Arrowsmith Tool & Die Co., secretary; Joe Matheny, B & M Engineering Co., treasurer.

Flynn & Emrich Expanding

Flynn & Emrich Co., Baltimore, with office and machine shop at 301 N. Holliday St. and foundry on Grantley road, is building a structure at the latter location, containing about 10,000 sq ft, which will increase the company's assembly space. The company manufactures filters, special machinery and castings.

Standard Nut Opens Plant

Standard Nut Mfg. Co. Inc. and Standard Nut Mfg. Sales Co. moved to a new plant at 1616 Monterey Pass Rd., Monterey Park, Calif.

Aries Headquarters Moved

R. S. Aries & Associates, consulting chemical engineers and economists, moved their executive offices to 270 Park Ave., New York.

Koppers Building Laboratory

Koppers Co. Inc., Metal Products Division, 200 Scott St., Baltimore, is erecting a 17,000-sq-ft mechanical laboratory building.

Snap-Tite Appoints Agent

Snap-Tite Inc., Union City, Pa., appointed Russell J. Smith, St. Louis, as a distributor of its industrial couplers in Illinois, Kentucky and Missouri.

Baltimore Aircoil Expands

Baltimore Aircoil Co. Inc., Baltimore, manufacturer of cooling towers and condensers for refrigeration and air conditioning, is erecting a 27,600-sq-ft plant addition, which will give the company a total area of 70,000 sq ft. The company plans to equip and have the addition in operation by the end of this year.

Pennsalt Offers New Paint Bond Line

Its Fosbond products are used for application of phosphate coatings to metals

NEWCOMER to the paint bond field, Pennsylvania Salt Mfg. Co., Philadelphia, has developed a line of phosphate coatings for metals.

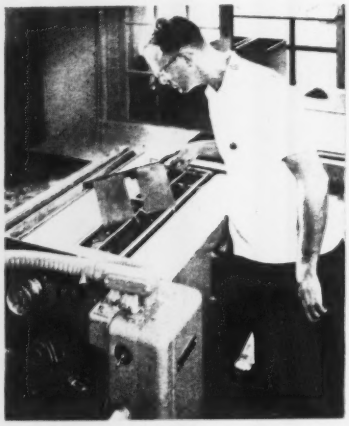
Called Fosbonds, they include iron phosphate, zinc phosphate and manganese phosphate coatings.

Phosphate Coatings — Their advantages lie in increasing corrosion resistance, especially for painted surfaces that become scratched or marred; insuring a more perfect bond of paint to metal; and providing a cushion flexible enough to resist severe impact and bending.

Painted metal surfaces subjected to a corrosive atmosphere may fail in two ways. Because of poor adhesion, the cured paint film may pull away from the metal surface, although remaining continuous. This is greatly accentuated if there are substantial variations in temperature and moisture of the atmosphere which cause the paint film to expand and contract. This loosened paint film is susceptible to flaking when subjected to scraping action or mechanical shock.

Buffer Zone—Another method of failure is undercutting or creeping corrosion from areas where a paint film has been broken as by scratching. The rust which forms soon after exposure of bare metal to the atmosphere soon spreads beneath the paint film, destroying the adhesion between the paint and the metal over a wider and wider area. Finally, the paint is forced off the metal and flakes or peels because of the volume of rust beneath it or because of mechanical shock.

Phosphate coatings act as a go-between between the paint and metal surface. There is

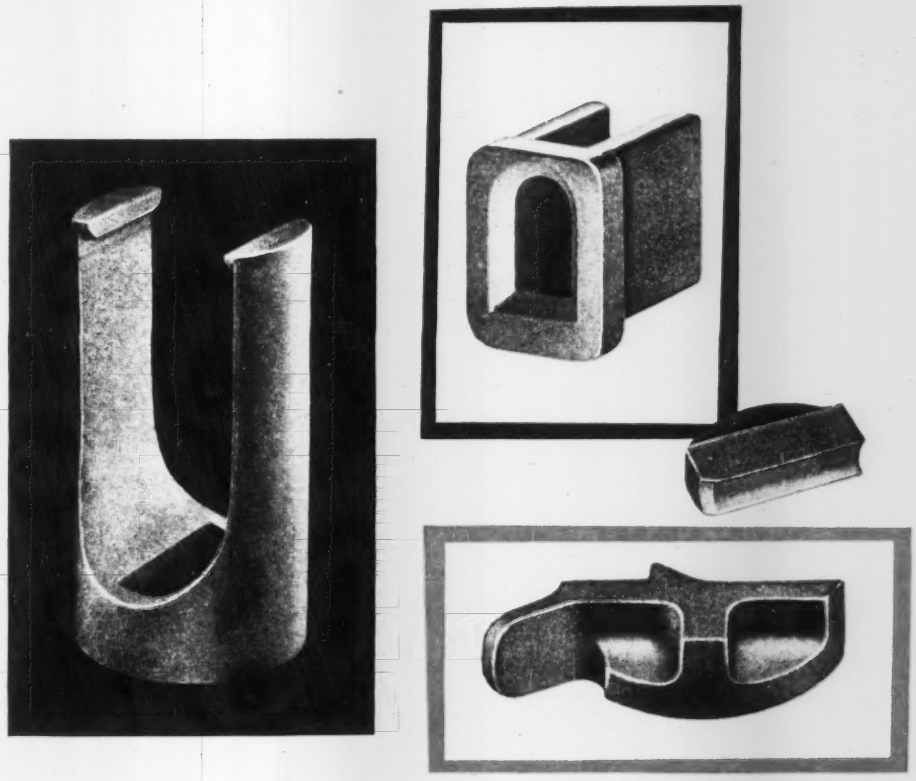


CLEANING CYCLES TESTED
. . . prior to coating application

set up what might be described as a buffer zone, preventing the further advance of moisture which might have permeated the paint film. To be sure, if a finished piece of work is dented or scratched through to the steel and then exposed to corrosive conditions, that pinpoint or scratch will rust.

However, the phosphate coating will prevent spread of the corrosion beyond the mark made, despite prolonged exposure to corrosive conditions. Because the phosphate coating is destroyed at only one point, it retains its effectiveness over the rest of the panel. Thus, the corrosion at the exposed steel is limited to a local scratch point.

Tests—Basic tests in which the effect of phosphate coatings can be studied are: Outdoor exposure, salt spray, humidity, mandrel and impact. Pennsalt has available at its Research & Development Division facilities for performing all of these tests. Extensive use of this equipment has been made in the development of Fosbond products. Facilities have been enlarged recently to meet the greater demands for this work.



improve product design . . .

cut manufacturing costs

with ACCUMET PRECISION INVESTMENT CASTINGS

In many cases design is restricted and function limited when alloy steel parts are made on conventional machinery from bar stock or forgings. Frequently such designs can be improved and production costs lowered by the use of precision investment castings. That's because this casting process permits the use of high alloy steels that are difficult to machine or forge.

Take these four component parts of a pneumatic tool for example. They are Accumet Investment Castings made by Crucible of 8620 steel. They have a smooth, satiny finish and are held to very close tolerances. If these parts were not made by this "lost wax" process, the pneumatic tool could not be produced at a practical cost in its present design

Crucible engineers and metallurgists are available to help solve design and production problems through the use of Accumet Precision Investment Castings. Write now, and let them help you solve yours.

Visit us at Booth 241, National Metal Show, Cleveland, Ohio, October 19-23

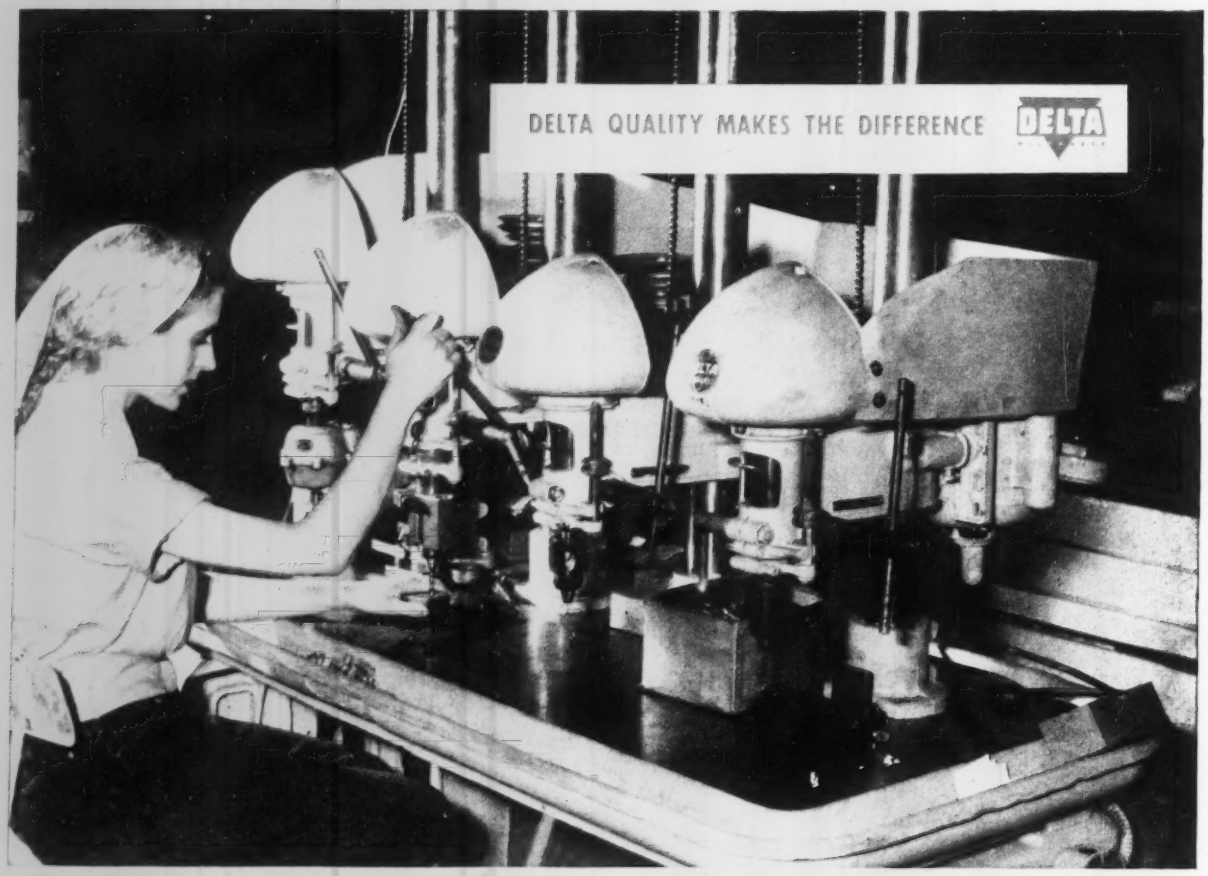
CRUCIBLE first name in special purpose steels

53 years of Fine steelmaking

ACCUMET PRECISION CASTINGS

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

REX HIGH SPEED • TOOL • REZISTAL STAINLESS • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS



One Operator Plus One DELTA Set-Up

HOLLOW MILLS, DRILLS, TAPS AND COUNTERSINKS

AT SKILLMAN HARDWARE

More pieces per hour with less labor cost—that's what Skillman Hardware Manufacturing Co., Trenton, N. J., gets by locating inexpensive Delta tools in groups so that related machining operations can be done by a single operator.

Though Delta tools are inexpensive, they are production machine tools—as accurate as tools costing many times as much.

Here's the testimony of John Strasenburgh, Skillman production foreman: "Of course, since we build locks, our precision standards are very high, and we work as close as .0005", but our Delta tools are accurate, dependable and easy to operate."

These are some of the ways Skillman groups Delta tools:

- . . . two Delta drill presses side by side; one drills, the other taps.
- . . . three Delta drill presses together to drill, tap and counter sink.
- . . . four Delta drill presses—to hollow mill, drill, tap and counter sink.
- . . . two 17" Delta drill presses mounted on single column with opposing spindles drilling and reaming same hole in one set-up.

Light, mobile, dependable Delta tools are easily adapted to hundreds of production jobs. There's a wealth of such performance data available to you. Ask your Delta dealer—he's in your Classified Phone Book under "Tools," "Machinery" or write for Catalog AB52 to Delta Power Tool Division, Rockwell Manufacturing Co., 638K N. Lexington Ave., Pittsburgh 8, Pa.

DELTA quality power tools

Another Product of **Rockwell**

Technical Outlook

October 5, 1953

WET OR DRY—Rubber conveyor belt has been designed with a surface that sheds or retains water, according to B. F. Goodrich Co., Akron, O. Molded rubber ridges (⅛ inch high and spaced several inches apart) form a continuous series of shevron patterns. Ridges function either as a series of horizontal carrying ribs that retain water on the belt or they can channel water to edge of belt where it flows off.

UNDER WRAPS—Electric blanket has found applications outside the bedroom. They're being used to retain friction-induced heat in cold-rolled sheets between shifts and over weekends.

DOUBLING UP—Glass fiber saturated with vibrin polyester resin, product of U.S. Rubber Co., is being used to make light, corrosion-resistant trailer and truck bodies. Seaboard Transportation Co., Antioch, Calif., reports tractor and two semi-trailers meet California's gross weight limit of 76,800 pounds. Material has stood up under desert heat and snow and ice of mountains in Northwest.

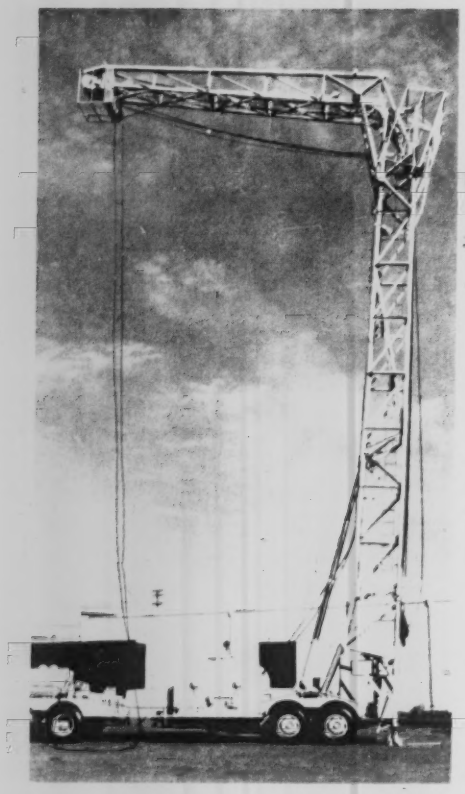
NEW TWIST—Torsion tests can be conducted on tension tester by use of Schaevitz device produced by Baldwin-Lima-Hamilton Corp., Philadelphia. Maximum torque load of 60,000 inch-pounds is obtained by application of 12,000-pound load. Specimens from 2 to 12 inches long and up to ¾ inch square can be twisted 24 degrees.

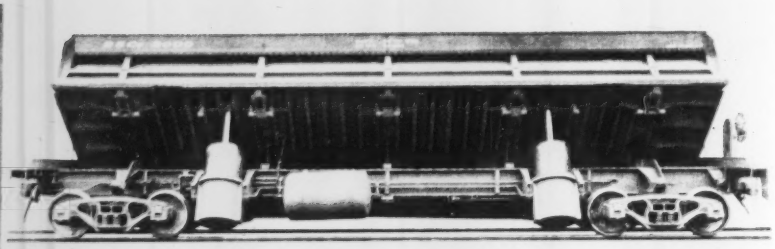
HOT WORK—Age hardening, high cobalt, low carbon alloy die steel, particularly suited for brass die casting and extrusion dies, has been announced by Braeburn Alloy Steel Corp., Braeburn, Pa. Trade named Congo Hot Work, it is said to combine resistance to heat checking in service and machinability at relatively high hardness. Suggested applications: Dies for brass die casting, cores for aluminum and magnesium die casting, master hobs used in beryllium-copper, pressure casting and dies for copper and brass extrusion.

JET PICKLE—Submerged-combustion, continuous pickle line, said to be the first in the country, will be in operation by Nov. 1 at Wallingford Steel Co., Wallingford, Conn. Process employs two air-gas jets that combust under water and violently agitate water. They face each other from opposite ends of a tank which is 86 feet long. Line will process carbon strip. It'll take two 27-inch widths or other sizes in combination up to 54 inches.

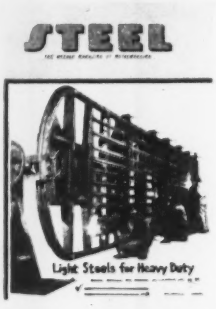
ALUMINUM IDEAS—Add to the list, these novel applications for aluminum. Munich, Germany, firemen are currently wearing fire-fighting suits tailored from reflective aluminum foil. Cut somewhat on the lines of a nightshirt, the foil gives protection from the heat of severe fires . . . In the dental field, the British Army is reporting success in its use of super-pure aluminum, 3 per cent magnesium alloy for dental plates. Alloy sheet is shaped easily, anodized and readily cleaned.

WHAT'S ON THE INSIDE—When designers are asked to do the impossible, they'd do well to consider high-strength, low-alloy steels. For ways to lop off weight and fatten payloads at same time, see p. 88 . . . For the dollars and cents side of the same picture, see p. 90 . . . And speaking of tough jobs, description of how two big broaches can do the work of many is set out on p. 106 . . . While on the subject of machines, turn to p. 134 to see how precision can be built into an automatic line . . . Same progressive pace is being kept up in hot mills, where oxygen cut-offs are winning a place in bloom and slab lines. That one is on p. 98.





High strength Kaisaloy was used to make the service rig at left. Its 110-foot mast jack-knifes over chassis. Above — Bethlehem's Mayari-R applied in bottom of dump car shows how high strength adds to payloads



Light Steel Adds Service Pounds

Low alloy, high strength steels open up new opportunities for design of lighter sections and increased payloads. Corrosion resistance is safety factor

By DR. ALLEN G. GRAY
Technical Editor

METALLURGICALLY tailored to modern design and fabrication requirements, low alloy high strength steels are proving their worth in more and more applications.

Besides high yield strength and good corrosion resistance, present day steels of this type possess weldability and formability along with good abrasion and fatigue resistance. When products are designed to take advantage of the high strength properties, three tons will produce the same number of units as four tons of ordinary carbon steel.

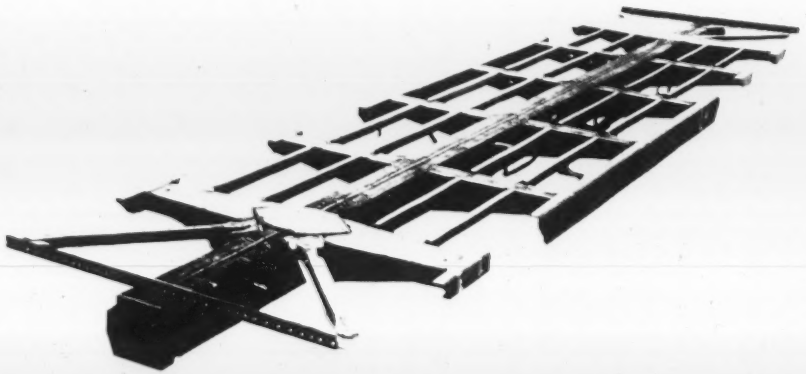
Deadweight Goes — Trend in product design is strongly toward elimination of useless weight, not only in automotive and other transportation equipment but also in home, office and business appliances and many other products. For many applications, low alloy, high strength steel will handle unit stresses one-fourth to one-third higher than its common steel equivalent without sacrifice of performance, service life or safety. Translated into dollars this means less deadweight, bigger payloads, more efficiency.

Various combinations of alloying elements are employed by the different producers of the low alloy, high strength steels. (See table opposite page.) In the hot-rolled condition, within certain thickness limitations minimum mechanical properties commonly are: Yield point, 50,000 psi; ultimate strength 70,000 psi. Typical steel specifications covering this group are: ASTM A242 low alloy structural steel, and SAE 950, high strength, low alloy steel.

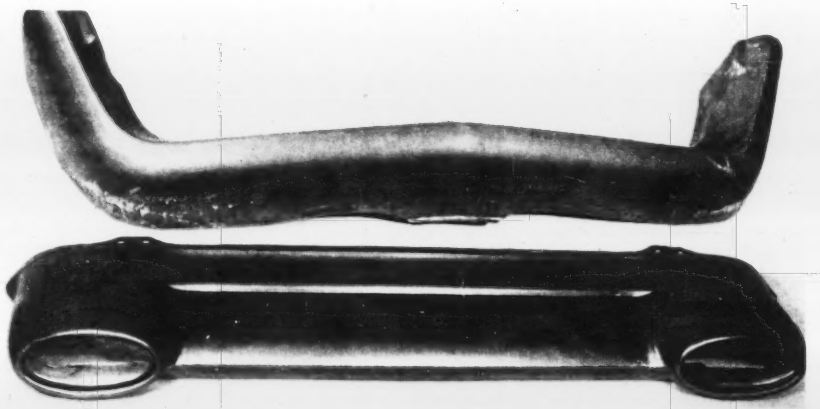
As noted above, low alloy, high strength steels have a minimum yield point averaging 50,000 psi; yield point is about 30,000 psi for ordinary carbon structural steel. Ratio of these values is about 1.5 to 1.0, which means that working stress in tension can be as much as 50 per cent higher. Usually the reduction in section is two gages. Weight saving is generally at least 25 per cent.

Bonus—Useful properties built into the low alloy, high strength steels have been attained through addition of selected combinations of multiple alloys. Fortunately, some of the elements which impart strength to steel are also those used to obtain improved corrosion resistance. Better corrosion resistance guards against impairment of service life or safety due to premature failure from corrosion.

Low alloy, high strength steels are readily adaptable to fabrication by shearing, gas cutting, punching, forming and welding. They are intended for use without quenching and tempering heat treatment by the fabricator. In fabrication of certain complex structures, stress relieving or intermediate annealing may be required. In welded structures, preheating or postheating is not generally needed. High strength steel products are generally available in forms commonly supplied in ordinary steel.



The assembled car underframe above was fabricated from Republic high strength steel for the Union Pacific Railroad Co.



These deep drawn auto bumper bars were cold stamped from N-A-X high tensile steel, a product of Great Lakes Steel Corp.

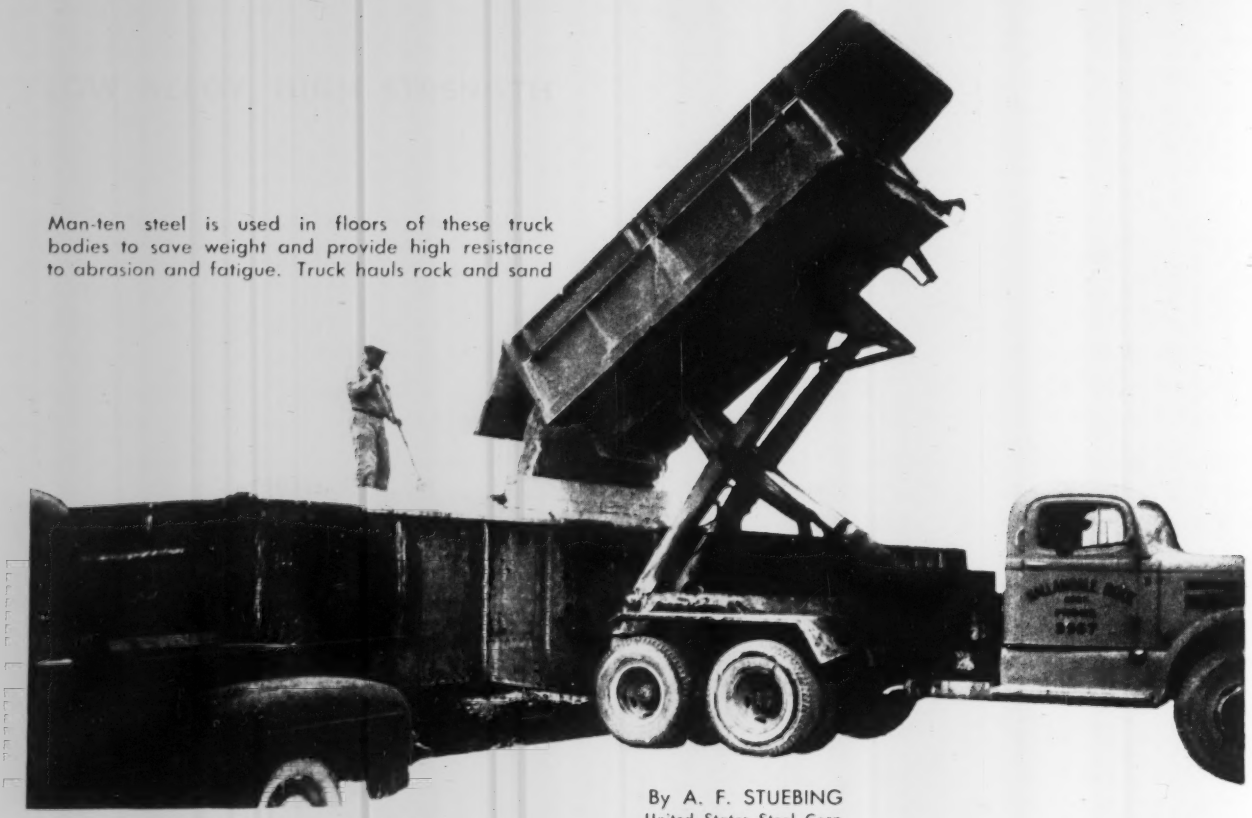
LOW ALLOY HIGH STRENGTH STEELS

Name	Producer	Chemical Composition Limits, Per Cent C	Mn	P	S	Si	Cu	Mo	Cr	Ni	Others	PROPERTIES (up to and including ½-inch-hot rolled) Yield Point Min. psi	Tensile Strength Min. psi	% elongation in 2-in. for stand., ASTM spec.
Aldecor	Republic Steel Corp.	0.12 Max.	0.15-0.40	0.08-0.15	0.05 Max.	0.35-0.75	0.25-0.60	0.10-0.25				50,000	70,000	22
Cor-Ten	U. S. Steel Corp. Republic Steel Corp. Sharon Steel Corp. Inland Steel Co.	0.12 Max.	0.20-0.50	0.07-0.15	0.05 Max.	0.25-0.75	0.25-0.55		0.30-1.25	0.65 Max.		50,000	70,000	22
Republic Double Strength	Republic Steel Corp.	0.12 Max.	0.50-1.00	0.04 Max.	0.05 Max.		0.50-1.00	0.10 Min.		0.50-1.10		50,000	70,000	22
Dynalloy	Alan Wood Steel Co.	0.12 Av.	0.75 Av.	0.08 Av.	0.05 Max.	0.05 Av.	0.60 Max.	0.10 Max.		1.00 Max.		50,000	65,000 80,000	22
Hi-Steel	Inland Steel Co.	0.12 Max.	0.50-0.90	0.05-0.10	0.05 Max.	0.15 Max.	0.95-1.30	0.05-0.15		0.45-0.75	Al-0.12-0.27	50,000	70,000	22[3]
Hi-Man	Inland Steel Co.	0.23 Max.	1.10-1.60	0.045 Max.	0.05 Max.	0.05 Max.	0.20 Min.					50,000	75,000	20
Jalten #1	Jones & Laughlin Steel Co.	0.15 Max.	1.30 Max.	0.040 Max.	0.05 Max.	0.10 Max.	0.30 Max.				V-0.035-0.065	50,000	65,000	22
Jalten #2	Jones & Laughlin Steel Co.	0.15 Max.	1.40 Max.	0.140 Max.	0.05 Max.	0.10 Max.	0.30 Max.					50,000	70,000	22
Jalten #3	Jones & Laughlin Steel Co.	0.25 Max.	1.60 Max.	0.040 Max.	0.05 Max.	0.30 Max.	0.20 Max.					50,000	70,000	22
Kasaloy	Kaiser Steel Corp.	0.18 Max.	1.50 Max.	0.04 Max.	0.05 Max.	0.35 Max.	0.35 Max.	0.10 Max.	0.20 Max.	0.30 Max.	V-0.02 Min.-T-0.005 Min.	50,000	70,000	22
Man-Ten	U. S. Steel Corp.	0.23 Max.	1.10-1.60	0.045 Max.	0.05 Max.	0.3 Max.	0.20 Min.							
Mayari-B	Bethlehem Steel Co.	0.12 Max.	0.50-1.00	0.06-0.12	0.05 Max.	0.10-0.50	0.30-0.70					50,000	75,000	20
N-A-X High-Tensile	Great Lakes Steel Corp. Weirton Steel Co. Republic Steel Corp. Sharon Steel Corp. Granite City Steel Co.[2]	0.13 Av.	0.70 Av.	0.020 Av.	0.025 Av.	0.50 Av.			0.40-1.00 0.60 Av.	0.25-0.75	Zr-0.11 Av.	50,000 72,000	70,000 75,000	24 22
Tri-Ten	U. S. Steel Corp.	0.23 Max.	1.30 Max.	0.045 Max.	0.05 Max.	0.10-0.30	0.30-0.60							
Tri-Ten II[3]	U. S. Steel Corp.	0.23 Max.	1.30 Max.	0.045 Max.	0.05 Max.	0.10-0.30	0.20 Min.			0.50-1.00		50,000	70,000	22
Stelcoloy	Steel Co. of Canada	0.08-0.12	0.60-0.90	0.08-0.12	0.04 Max.		0.70-0.80				V-0.02 Min.	50,000	70,000	22
Yoloy	Youngstown Sheet & Tube Co.	0.15 Max.	0.60 Max.	0.04 Max.	0.05 Max.		0.75-1.25			0.60-0.70 1.5-2.0		50,000 50,000	70,000 70,000	22[3] 22

1. Steels with copper over a minimum of 0.60 will respond to precipitation hardening, resulting in a higher strength level depending on time-temperature cycle performed.
2. Licensed, not presently producing.
3. Alternate for Tri-Ten.

*Up to, but not including 3/16-in. thickness. 3/16-in. to ½-in. thickness inclusive, 1½" in 8 inches.

Compiled by STEEL



Man-ten steel is used in floors of these truck bodies to save weight and provide high resistance to abrasion and fatigue. Truck hauls rock and sand

By A. F. STUEBING
United States Steel Corp.
Pittsburgh, Pa.

FOR YOUR STEEL DOLLAR

Higher cost of high-strength, low-alloy steels is balanced out by fact its permissible stresses provide 50 per cent more strength than structural carbon steels

ALTHOUGH low alloy, high strength structural steels cost 50 per cent more than their carbon steel counterparts, they may be cheaper in the long run. In addition to being 50 per cent stronger than carbon steels, high strength steels also may provide four to six times more corrosion resistance.

Three potential advantages make them economical for nearly all major steel consuming industries: 1. Minimum cost per unit of strength. 2. Minimum cost per unit of service life and 3. Minimum over-all cost related to operating savings and lower maintenance expense.

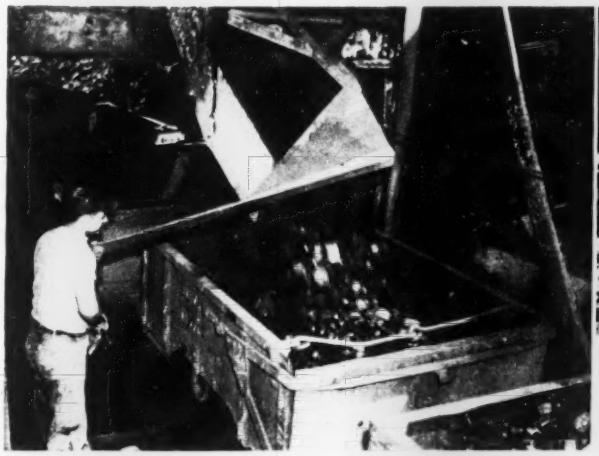
Hit from Start—Earliest large-scale applications were in railroad freight and passenger cars. Now, more than 200,000 of the former and 6000 of the latter have been built with carbon steel bodies.

Earth moving equipment manufacturers were charter users, too; and, today, high strength steel construction is standard in the industry.

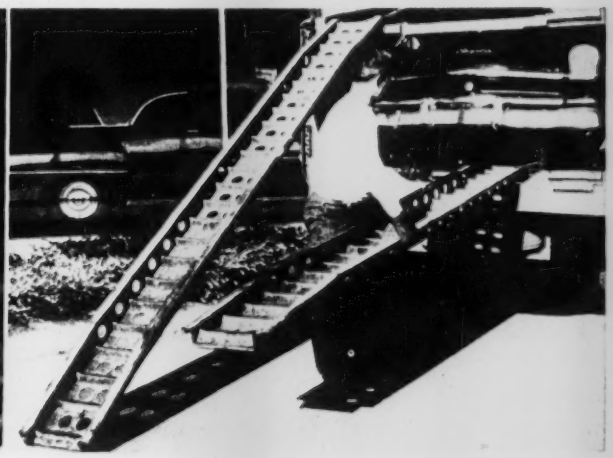
Here's why. When the new product first became available, for example, an electric power shovel with a 106-foot boom (used for stripping overburden in coal mines) carried an 18-cu-yd dipper on a 70-foot dipper stick. High-strength steel and welded construction in dipper and dipper stick, increased dipper capacity to 30 cu yds. That wasn't all. When the dipper was filled, its weight was no more than the loaded 18-cu-yd, carbon-steel dipper. Increase of 67 per cent in pay load was gained without changing gross weight.

Old Faithful—Where reliability enters the picture, high strength steels have paid off as well as they do in the weight-trimming department. When an epidemic of dipper stick breakage was reported during the −40 to −50° F winter of 1949-50 on the Minnesota iron range, many shovels with high strength dipper sticks pulled through with flying colors.

Operators of mines were among the early users and now employ



These mine cars were built of ¼-inch Cor-ten steel in 1941. In deep and strip mining service since then, they have not required maintenance, including paint



Weight of these unloading skids was reduced 38 per cent through use of high strength steel. Their weight is 95 pounds, compared to 154 pounds for carbon steel

the metal in bodies of thousands of cars that handle coal, stone and ore. Specifications calling for sturdiness and long life led to the use of high-strength steels in about the same sections formerly requiring carbon steel. This use has extended to hoppers, conveyors and screens.

In oil and gas extraction industries, high-strength steels are used with success as oil well derricks, portable drilling masts, walking beams and oil storage tanks.

Auto Industry—Here we have extensive use of high-strength steels. They are found in heavy trucks, trailers, semi-trailers, gasoline tank trucks, garbage and refuse trucks and buses. Requirements call for greater strength or weight reduction plus extra service life.

Trailer manufacturer reports that high-strength steel and a tandem axle increased his payload 50 per cent over carbon-steel, single-axle trailers. These trailers require 33 per cent fewer trips to do a job. Time and cost savings quickly paid off extra cost of equipment.

Passenger car uses of high-strength steel include bumpers and some body parts. Steels of this type are more readily cold formed than others having a comparable yield point. They're used for light, high-strength pressings.

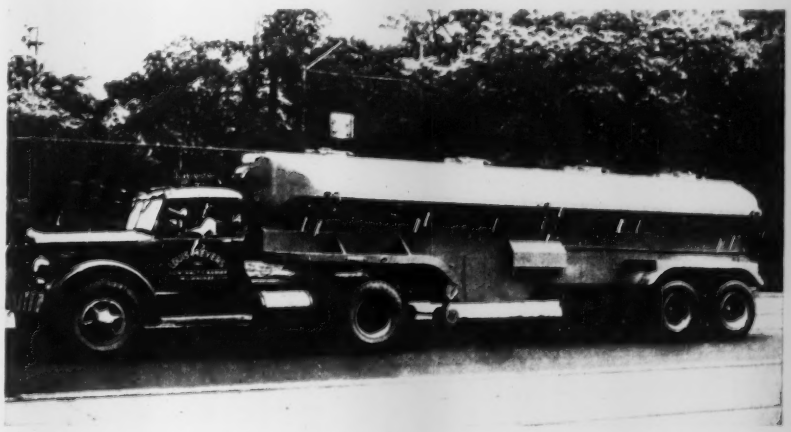
Corrosion—Good share of equipment in and around power stations is exposed to corrosive atmospheres and often abrasion. High-strength steels most resistant to atmospheric corrosion have been used for many years in the rotating type of air preheaters to secure longer life where moisture is deposited and abrasion is caused by dust carried in the rapidly-moving flue gases.

Other applications in power generation and transmission include boiler breechings and casings, circulating water pipes in steam-turbines, power plants, casings of mixed flow and propeller-type, axial-flow pumps and fan blades for stacks and recirculator dust collecting.

One of the noteworthy applications of high-strength steels is in the shells of electrical transformers. By using high-strength steel plates instead of copper-steel plates, weight of transformer shells has been reduced up to 25 per cent.

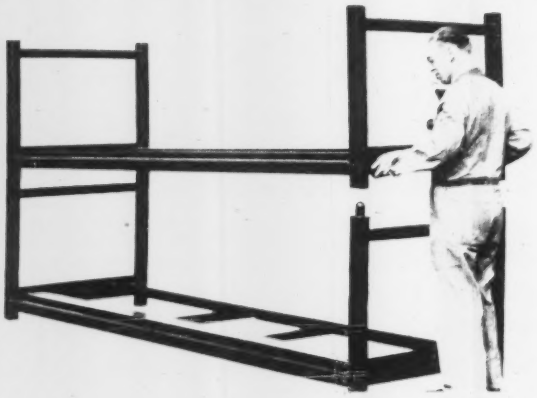
Preferred materials for transformers are the high-strength steels that have proved themselves in corrosive atmospheres. This is especially so where transformers are in industrial or sea coast atmospheres. Use of the metal in transmission towers is another economical application in the electrical power field.

Abusive Conditions—In agricultural equipment, increased atmospheric corrosion resistance provides longer life under abusive conditions of exposure where



High strength steel is used in V-type bottom of this bulk cementer. Cor-ten construction reduced weight by 1,150 pounds and increased the payload

Weight of these LP gas cylinders was reduced 24 per cent by the use of Man-ten steel. Still they are just as strong, if not stronger, than carbon steel types



This standard carrier unit is 3 feet, 3 inches wide by 9 feet long. Built of 11-gage, high strength steel, it is 26 pounds lighter than 10-gage carbon steel

equipment is not protected. Light-weight is an economy in many types of equipment, including those pulled by tractors. Farm appliance manufacturers have put high-strength steels in combines, corn huskers, threshers, fertilizer spreaders and farm wagons.

Among the items of household and building equipment made with high-strength steel to save weight or increase service life are water tanks, liquefied-petroleum gas cylinders and air-conditioning ducts.

Buildings — Generally, building construction does not provide a suitable field for high-strength steel. Weight reduction in structural members is usually not important or economical. But in some instances these steels have been used in buildings, bridges and other large structures fabricated for export. Chief aim here is reduced freight rates and economy of handling and erection charges at destination.

Of course, there are some building applications in this country. A manufacturer of steel buildings, for instance, found that high-strength steel costs substantially less than carbon steel per pound of live load carried for roof purlins and sidewall girts.

He originally used carbon steel with minimum yield point of 33,000 psi for a pressed zee. Section made of 14-gage, carbon steel used as purlins was adequate for a roof load of 15 lbs per sq ft. When heavier roof loads were needed, same zee section was made of 14-gage, high-strength steel. Although cost was higher than carbon steel, it was less per pound of live load carried.

In bridges with relatively long spans, reduction in weight of the structure itself yields substantial economy of material. Weldable, high-strength steels are proving more adaptable and economical than structural silicon steel sometimes used in long spans. Suspension bridge now under construction was designed for the latter, which has a yield point 36 per cent higher than structural carbon steel. Use of high-strength steel reduced weight of truss girders and towers by 300 tons or nearly 10 per cent.

Other satisfactory applications of high-strength steel have been made in deck or ballast plates of railway bridges, blast plates and highway bridges.

Other Uses—Applications developing in ship building include inner bottoms, floors, tank sides and hatch covers of ore boats; hulls of small vessels; barges and accessories, such as boiler breechings, air heaters, coal bunkers and engine deck plates.

Miscellaneous applications of high-strength steels are numerous and greatly diversified. Cross section includes lampposts, automobile jacks, cable reels, stokers, heating furnace bodies, filing cabinets, file drawer slides, cabinets, wings and lapboards of power ironers, re-usable shipper containers, canal locks, gates and dams, concrete forms and welded pipe.

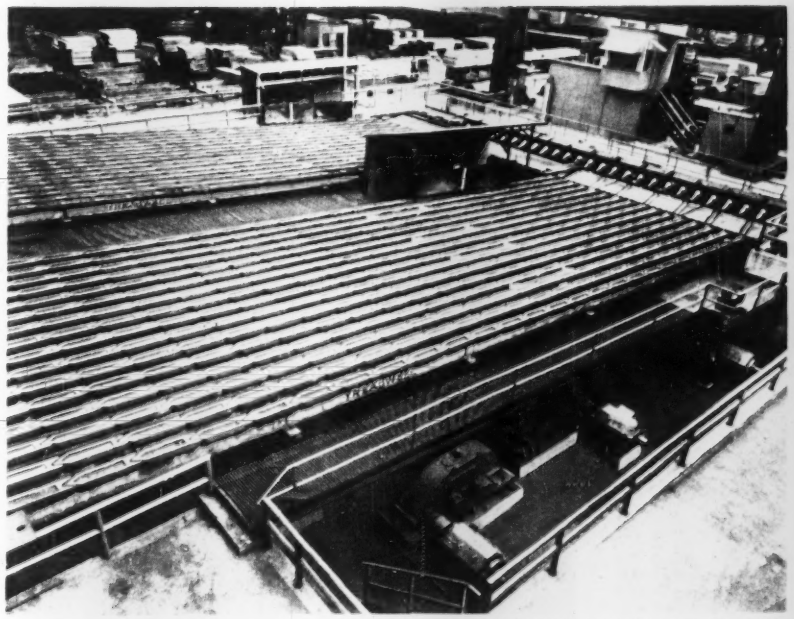
Outlook—Far reaching effects of weight reduction through modern design and light-weight construction is demonstrated by the fact that about 3 tons of high-strength steel are equivalent to at least 4 tons of carbon steel. So one-third more carbon steel would be required in many structures. Putting it another way, from an equal amount of high-strength steel, 25 per cent more units of lighter weight, and sometimes greater capacity, could be built.

At times when steel production is inadequate to meet all demands, additional units that can be produced with high-strength steel present an effective means of more nearly meeting consumer demand.

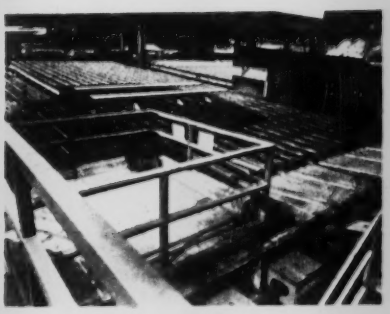
Greater significance of increased efficiency in use of materials lies in the salutary effect upon our rapidly depleting national resources. For every ton of carbon steel consumption rendered unnecessary by use of high-strength steels, our natural resources are conserved by 1.8 tons of iron ore; 1.4 tons of coal; 0.5 ton of limestone and 0.3 ton of purchased scrap and other materials. This total saving of raw materials requires an expenditure of relatively small quantities of alloying elements for superior steels.

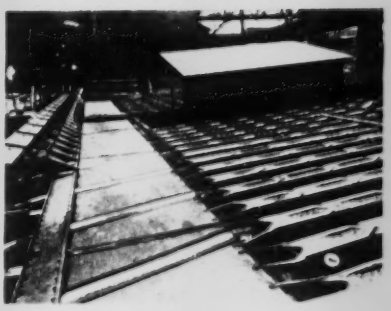
Adapted from a talk given by Mr. Stuebing before the recent Basic Materials Conference in New York City.

Treadwell



Courtesy Jones & Laughlin Steel Corp.

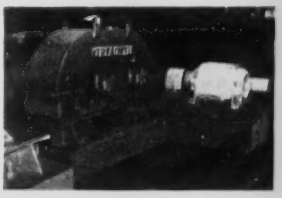




Bar and billet mill cooling beds capable of handling up to and including 5" square bars or billets up to and including 35' in length.

Beds are approximately 120' in length overall.

Bars or billets can be deposited on the beds alternately as fast as they are delivered from the mill.



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1217 FARMERS BANK BLDG.
PITTSBURGH 22, PA.
ATlantic 1-2883

Minimum Outlay for Simple Gamma Ray Lab

Number	Item	Cost
10	X-ray exposure holder, 8 x 10 inch	$9.00
10	Pair lead foil screens, 8 x 10 inch	23.50
1	75-sheet box industrial x-ray film, Type A, 8 x 10 inch	23.04
5	X-ray processing hangers, No. 3A, 8 x 10 inch	16.00
12	Dental film clips	1.85
1	Dental processing tank, 8 x 10 inch	60.00
1	Darkroom lamp with safe-light, series 6B	5.75
1	Tank and tray thermometer	1.99
1	Rapid x-ray developer, gallon size	.90
1	Liquid x-ray fixer and replenisher	1.30
1	Interval timer	10.50
1	Film drying rack	5.25
1	Adjustable safelight lamp with safelight, series 6B	8.75
1	Blue-tinted opalized glass, 5½-inch diameter	.78
1	Utility footswitch	10.00
100	Negative preserver envelopes, 8 x 10 inch	1.80
1	*Radiography in Modern Industry*, textbook	3.00
	TOTAL	**$183.41**

Equipment shown can be purchased for $183.41. Not included in picture is authoritative book on the subject

Radiography at Bargain Rates

Simple installation that will handle 8 x 10-inch film can be obtained for about $200, including cost of purchasing the radioactive source. Radium can be rented

GAMMA-RAY radiography is within the dollars and cents reach of even the more modest casting and welding shops.

You can install a simple, gamma-ray film processing laboratory at your plant for a nominal cost of about $183.41, according to Eastman Kodak Co., Rochester, N. Y.

Add about $25 per month for the rental of a 100-mg pill of radium or even less for the outright purchase of artificial radioactive sources, such as cobalt 60, and you're in business without being out of pocket much more than $200.

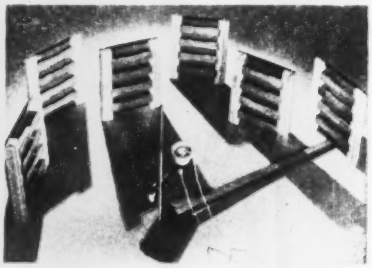
Laboratory—Of course, the estimated cost is based on the cash outlay for materials and accessories alone. Not in the picture are such things as processing of room space, electric wiring and plumbing.

But the minimum setup as visualized by Eastman is not a skimpy, makeshift affair. It provides for the exposure of 8 x 10-inch film to give the plant or shop an adequate trial of radiography; and in the selection of accessories, items have been chosen so that maximum use of them could be made later in an expanded laboratory capable of handling larger film sizes.

Operating Costs—With the materials provided, the purchaser is ready to go to work and will be limited only to investigation which can be carried out in the use of 8 x 10-inch film size or smaller.

Analysis of the cost of materials shows that $156.37 represents non-recurring costs. Their incidence, of course, will depend upon necessity for replacements owing to accidental damage or as the result of years of use.

Recurring cost is only $27.04, including 75-sheets of film, $23.04; 1 gallon of developer, 90c; 1 gallon of fixer and replenisher, $1.30; and 100 negative preserver envelopes, $1.80. Expenses here, of course, are a function of the number of exposures made and the amount of material expended.



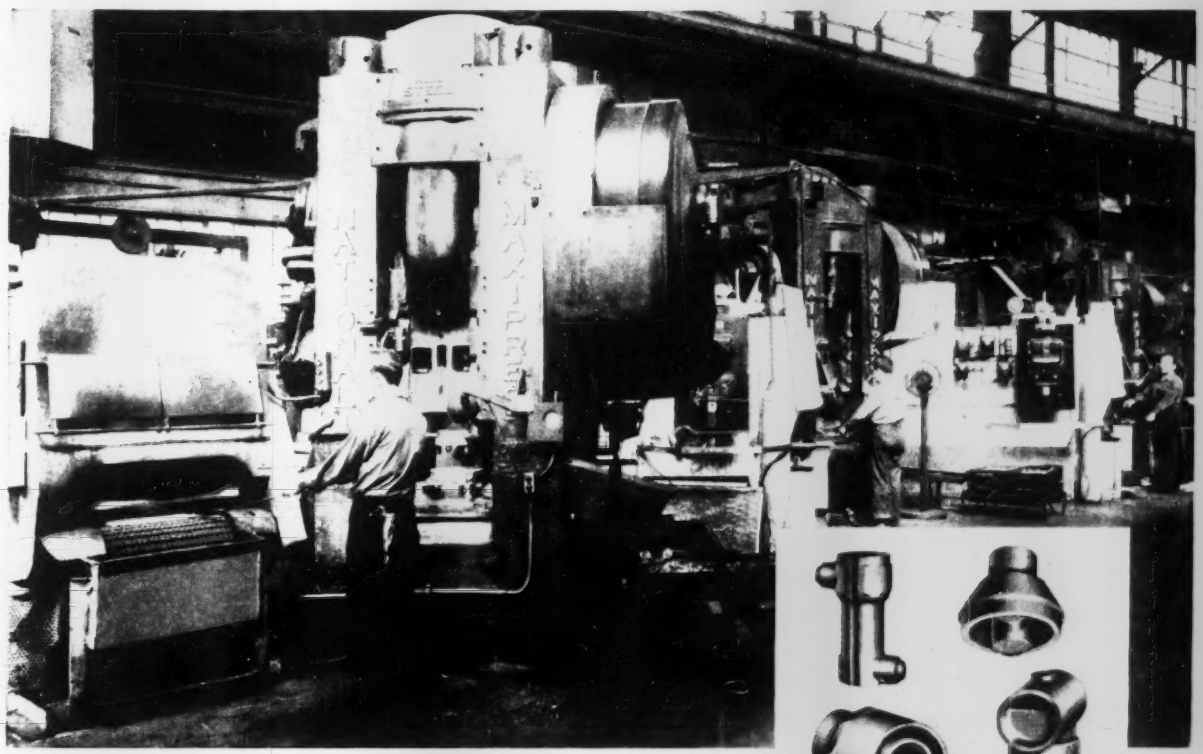
Casting samples on racks being exposed to gamma ray source in cup, center. X-ray film is behind samples

Tip—To get the new user on speaking terms with the operation, only one package of x-ray film of the slow type has been recommended. It gives maximum detail visibility.

But if the purchaser would like to get his feet a little wetter, he would be wise to include in the original order: One 75-sheet package of 8 x 10-inch, Kodak industrial x-ray film, Type K, which provides maximum speed of exposure. At the same time, it'd be well to throw in spare units of developer and fixer.

These extras will up the original estimate by $25.24.

For Novices—So you haven't



MAXIPRES forging operations at Titan Metal Manufacturing Co., Bellefonte, Pa.

Typical Titan forgings. Note intricate designs.

3600 TITAN Forgings Per Hour

. . . from this battery of

HIGH SPEED FORGING MAXIPRESSES!

Titan Metal Manufacturing Co., Bellefonte, Pa., specialists in quality brass and bronze forgings, is achieving outstanding production rates with this battery of three National High Speed Forging MAXIPRESSES, which reach 1,200 forgings per press per hour!

Titan forgings, many of intricate shapes with thin wall sections, vary in weight from less than one ounce up to 100 lbs. They are precision forgings, due in part to the over all ruggedness and built-in rigidity of the MAXIPRES.

If you have a forging problem—large or small, hot or cold—ferrous or non-ferrous—let us help you solve it. Send us prints, or a sample part, or, better yet, visit us. No obligation.

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had experience with radiography? Original $183.41 previously mentioned includes $3 for the purchase of an authoritative manual, Radiography in Modern Industry.

It covers such subjects as: Radiography's function in industry, the radiographic process, geometric principles, factors governing exposure, screens, scattered radiation, arithmetic of exposure, sensitivity and detail visibility, the processing room, etc.

Sources—Gamma ray sources include: For radium, Canadian Radium and Uranium Corp. and Radium Chemical Co., both of New York City, and Commercial Products Division, Atomic Energy of Canada Ltd., Ottawa. For cobalt 60 and others: Atomic Energy of Canada Ltd. and Tracerlab Inc., Boston, Mass.

More Zirconium Coming

ZIRCONIUM, a metal which long has been extremely difficult to refine, soon will be available for use in chemical equipment as well as in atomic energy installations. A commercially practical method for refining it has been developed only recently.

This became known with the announcement from the Pfaudler Co., Rochester, N. Y., that it had manufactured and shipped processing equipment for the large new zirconium plant being built at Akron, N. Y., by Carborundum Metals Co. Inc., a subsidiary of Carborundum Co., Niagara Falls, N. Y.

More Uses—Zirconium, which passes neutrons and possesses unusual corrosion resistance is used as a construction material for atomic energy reactors. Soon it will be available as well, for chemical equipment, pipes, valves, tubes, and pump liners. Hafnium, a very rare metal and a by-product of the zirconium process, has enormous absorption capacity for thermal neutrons and is used as control rod material in atomic reactors.

A Pfaudler spokesman described the major equipment supplied Carborundum as "glassed-steel reactors and heat exchangers, among other things." Glassed-steel is essential in high temperature, high pressure chemical processes. It assures product purity, corrosion resistance, lack of product adhesion, and absence of catalytic effect.

Setup developed for applying coil springs to brake drums: An air ram expands the spring over a cage, pushing spring down until it snaps into drum groove

Spring Expander Expedites Brake Assembly

Wound helical spring that goes into each brake drum takes considerable force to assemble. This cage expander, plus automatic indexing, makes the job move rapidly

BRAKE subassemblies are among components for front-running gears produced by Chevrolet-Detroit Gear & Axle Division. Each drum has an external circumferential groove adjacent to the flange at the open end.

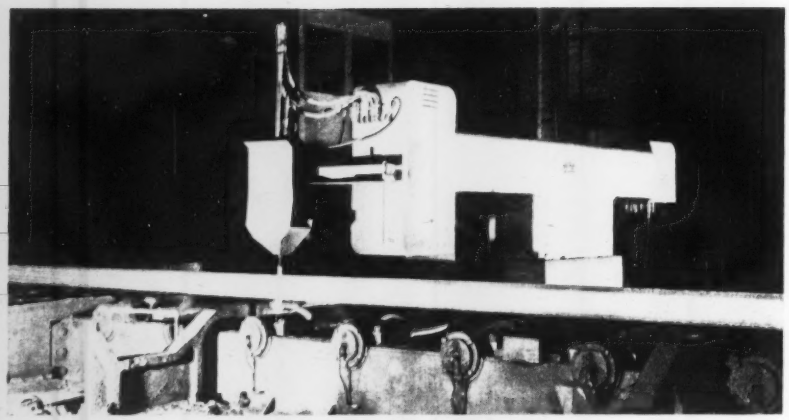
A wound helical spring is assembled in this groove. Because the spring is quite strong, considerable force is required to expand it sufficiently to pass over the drum and snap into the groove.

Basket-Like Cage—Assembly is now facilitated by the basket-like cage seen in use above. An air-operated plunger raises each drum as soon as it is indexed under the cage by a conveyor. This brings the ends of cage strips over the drum to a point just above the groove.

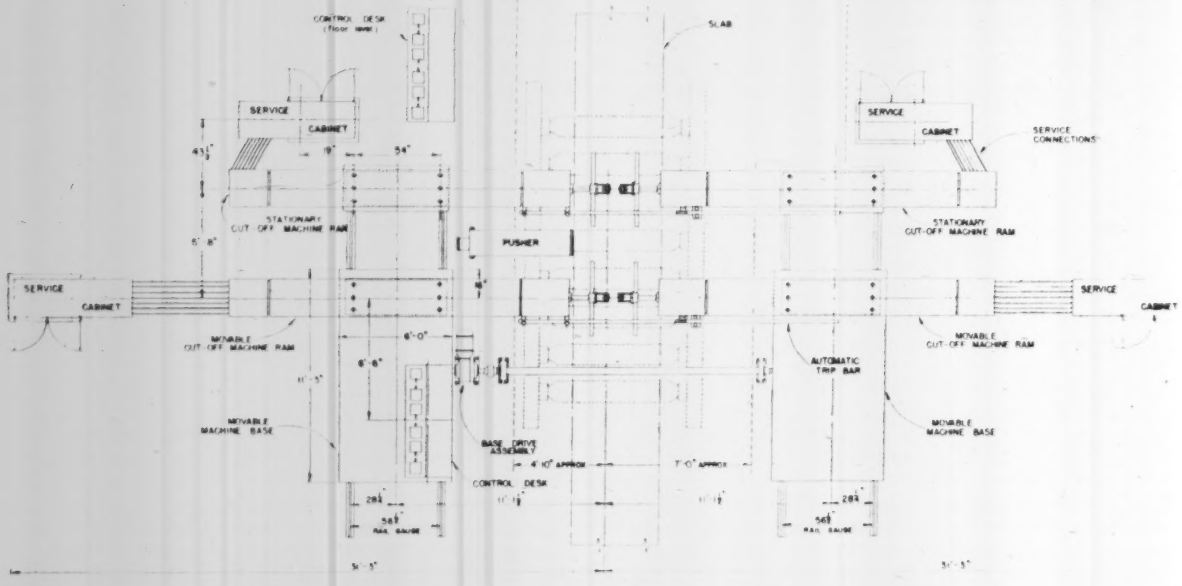
Because the cage tapers at the top, an operator can place a spring around this upper portion and hook the ends of the spring together without stretching, leaving it below four spokes whose ends project through cage strips and are attached to the drum of another air cylinder.

Automatic Indexing — When the operator presses a button, the ram descends, pushing the spring downward and expanding it until it reaches maximum cage diameter. With further motion beyond this diameter the spring contracts, but spring tension causes it to continue downward until it snaps into the drum groove. Thereupon, both rams retract, completing the cycle.

Drums are indexed automatically by the conveyor, each pausing under the cage until the spring is applied, then advancing until the next drum comes into position for receiving its spring. There is no hand shifting of drums. Thus, the operator handles only the springs, which are applied rapidly.



High-speed slab cut-off machine, shown in plan view, is composed of four cutting units similar to the one at right. Cutters work in pairs, with one set stationary and the other able to move down the line while cutting



Oxygen Cut-Offs In The Hot Mill

By R. L. DEILY
Steel Mill Representative
Air Reduction Sales Co.
New York

They're gaining favor as a reliable and flexible component for bloom and slab lines. Accumulated experience proves any thickness can be hot-cut over wide range of speeds

DEVELOPMENT of oxygen cutting from routine hand maintenance to engineered machines for standard rolling mill production applications has progressed in two major directions: Machine scarfing and oxygen hot cut-off machines.

Present day high capacity machines for both operations are engineered from extensive background in oxygen cutting at rolling mill temperatures. Data point up the fact that any particular thickness of steel can be consistently hot-cut at a wide range of speeds, depending primarily on the oxygen volume used.

Early Lessons—It was soon learned that daily use of oxygen cutting equipment in rolling mill lines put such severe strain on equipment that standard machines would not stand up under the abuse. Big step in engineering development was the machine which produced 685-pound forging slugs from 15-inch rounds, using two simultaneous torch cuts. Weight tolerance was minus 0, plus 15 pounds.

Although a standard cutting machine carriage was used for moving the torches, the carrying arms were strengthened and shielded from the heat of the bloom. Another long step was taken with the installation of a machine at the run-out table of a blooming mill. This one was designed specifically for rolling mill service. Torch carrying mechanism was at some distance from the hot steel; fuel

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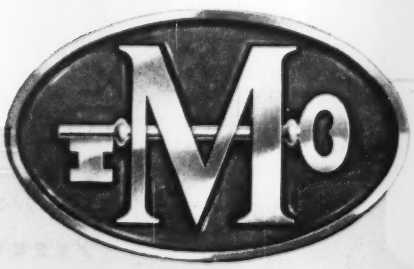

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CUTTING SPEEDS AND OXYGEN FLOWS, PRODUCTION OXYGEN CUTTING OF 8½" ROUNDS

CUTTING TIP	CUTTING SPEEDS (in./min.)	OXYGEN FLOW (cu. ft./hr.)
1	20–22	3000–3500
2	19–25	3100–3800
3	24–30	5000–7000
4	28–34	7000

gases, oxygen and other services entered the machine from a central cabinet and were solenoid-controlled, and all-electric control of the machine made it possible to operate it from a remote mill-type desk.

Recent Advance—Recent installation of a hot cut-off machine in a large Eastern mill points up further refinements in design. Problem was to cut long multiples of 8½-inch round blooms to 30-foot lengths on the run-out table of a 30-inch mill without disturbing the rolling cycle. Twenty-five seconds are allowed for each cut, and this requirement has been met easily since trial runs proved it possible to make consistent cuts in as little as 17 seconds.

All moving parts are so thoroughly protected by shields or covers that at a glance, machine looks like a stationary mechanism. Actually, the whole upper half, from torch to service hoses, is a moving unit which has an 80-inch stroke, sufficient to move the torch completely across the roller table. From his pulpit, the operator can control roller table for positioning bloom, raise or lower the torches, move them back and forth across table and regulate preheat gases and cutting oxygen.

Big Advantage—Outstanding feature of the hot cut-off is its nearly 100 per cent availability. Working part of the machine is the torch and tip, neither of which is subject to any mechanical load. All parts subject to radiant heat are water cooled. Since cutting tip clearance above the steel is from 1½ to 2 inches, there is very little fouling of the tip from flying scale.

Cutting tips can be changed in a few minutes, and the entire cutting torch can be changed in 10 minutes if it should become accidentally damaged. Moving parts are available through doors for periodic maintenance, and a central lubrication system further eases the problem of machine care.

Hot Slab Machine—It was this same question of operating dependability in cut-off equipment which prompted one mill to ask for a design of hot slab cut-off machine. Did the machines have the potential cutting speed? Data in the enclosed table answers that one. For ordinary slab thicknesses of 4 to 6 inches, single torch cutting speeds of 30 ipm are easily possible. Use of two torches on the same cut will give effective cutting speed of 60 ipm, thus making torch cutting capable of slab mill speeds.

Accordingly, the largest hot cut-off machine to date has been designed for an Eastern mill. In general, the machine consists of two opposed pairs of units, each similar in design to the hot bloom cut-off machines. This machine cuts slabs up to 74 inches in width, of any thickness and length.

How It Works—During a cut, the two torches approach each other to within a few inches. At a predetermined distance, the automatic trip bar first stops and then retracts one of the torches, and the other one finishes the cut. Each torch has 80 inches of horizontal travel, so a single unit can cut the entire width of the slab if required.

Since the desired lengths of slabs can be extremely variable, the second pair of torch-carrying units is mounted on a set of movable bases. These are driven by a common drive assembly so that as the pair of torches moves back and forth along the roller line they will always be directly opposite.

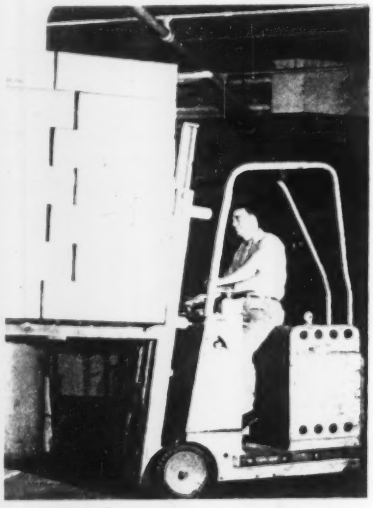
Preferred practice is for a single operator to run one pair of torches making a single cut. Control desk for the stationary units is usually at floor level, and the desk for the movable units is on one of the movable machine bases. It is quite possible to locate all controls in a pulpit which straddles the roller line, if such location is considered advisable for a particular installation.

Accumulated experience with oxygen hot cut-off machines of smaller sizes than this unit has demonstrated the advantages of high operating availability and relative flexibility. With shutdowns minimized by the high operating availability, resulting savings should quickly repay the investment in the oxygen cut-off unit.

Trucking Safety Solved

Best warning idea was putting ball bearings in hub caps. Jingling warns of truck approach

EXPERIENCE of a recent purchaser of electric fork trucks for a warehousing operation brought an interesting solution to an operational problem. The user found that because of quiet operation of his electric trucks, there was no warning of approaching trucks at aisle intersections or at areas where workers were gathered. Although



HUBCAPS GIVE THE WARNING

. . . jingle is better than horns

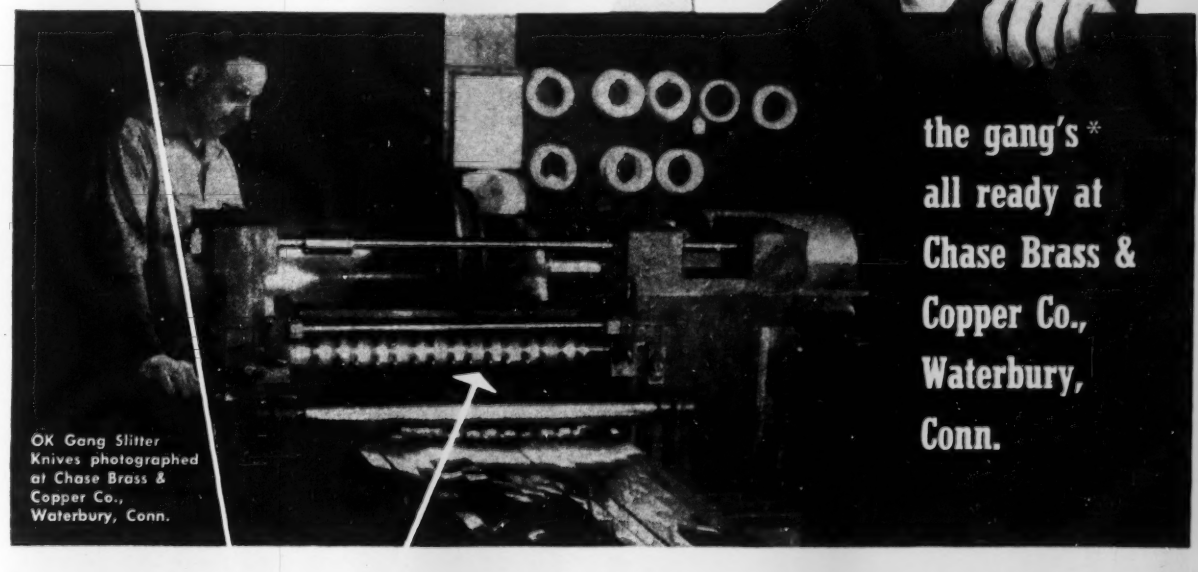
each truck is equipped with a horn, the user required a continuous warning rather than intermittent toots.

Wanted: Ideas—A request for ideas went out to the fork truck manufacturer, Lewis-Shepard Co., Watertown, Mass. The solution was a relatively simple one that maintained the advantages of the electric's quiet operation but gave the necessary warning.

Balls from ball bearings were placed inside the hub caps. The result was a gentle jingle—a sound that all workers and operators can easily recognize as signalling the approach of a truck.

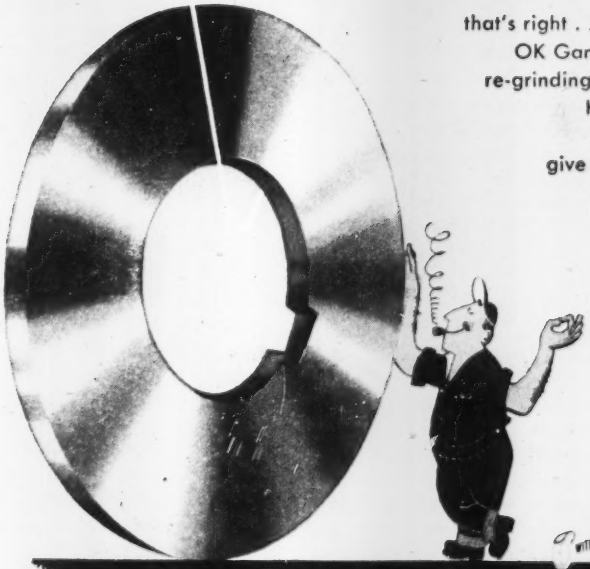
Engineers at Lewis-Shepard state that although many ideas were forwarded, the one adopted met all the requirements including the fact it constituted no additional drain on the power.

it's OK let'er go!



OK Gang Slitter Knives photographed at Chase Brass & Copper Co., Waterbury, Conn.

the gang's * all ready at Chase Brass & Copper Co., Waterbury, Conn.



that's right . . . ready to knock down production costs because OK Gang Slitter Knives* can run hour after hour without re-grinding giving you top machine productivity at all times. Here's why: exact metallurgical specifications for OK steel—an exclusive heat treating process to give uniform hardness and temper—special grinding and finishing to tolerances of ± .00025 or closer if required.

Manufacturers for the Metal Working Industry of Slitter Knives, Shear Blades, Rotary Shear Knives, Hardened Spacers, Hardened Ways, Gibs, Ball Races, Bronze Ways, and Wear Strips.

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For more than 20 years, in practically every type of industry, HOMESTEAD LEVER-SEALDS have been giving trouble-free performance in services where extremes of temperature or pressure or corrosive line fluids cause ordinary valves to "stick" or "seize."

HOMESTEAD Lever-Seald PLUG VALVES are "Stick-Proof" because they're "Lever-Seald," which means that a powerful lever-and-screw device, built into every valve, assures positive action at all times under all conditions.

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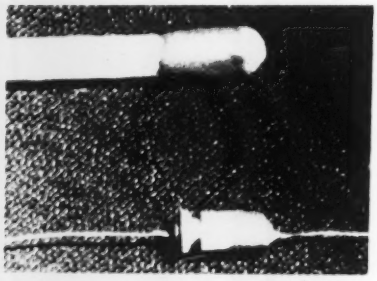
Tiny Tantalum Capacitors

New companion to the transistor helps miniaturization program in electronic circuitry

A TINY tantalum capacitor, believed to be the smallest high capacity unit ever designed for low voltage, direct current applications, has been announced by the General Electric Co.'s capacitor department at Hudson Falls, N. Y.

It will make possible further size reductions in miniaturized assemblies using transistors and is intended as a companion for the transistor, G-E engineers said.

Micro-miniature—New unit is so small—5/16-inch long and ⅛-inch diameter—that it has been termed



FIRST OF MICRO-MINIATURES
. . . they'll match the transistors

a "micro-miniature" capacitor. It is the first in a new line of small capacitors being developed by GE for miniaturized equipment.

Capacitor can be used in hearing aids and, in many instances, can be applied in transistorized military equipment. GE engineers believe it will also aid in opening the door for commercial applications of miniature electronic products.

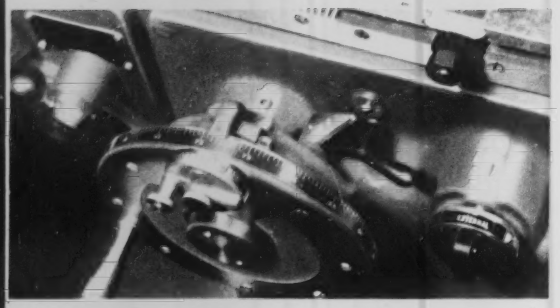
Sealed Unit—They said the major feature of the unit is the advantage in size per volt microfarad over most other electrolytics. Other features include: long shelf and operating life, wide temperature range and low leakage current. The unit is sealed against leakage or contamination and utilizes a non-acid electrolyte.

It is designed to operate over a temperature range of minus 20° C to plus 50° C and is suitable for storage at minus 65° C.

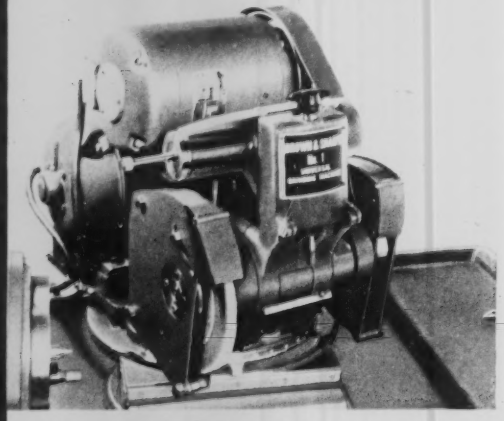
Unit is available in ratings from

Dramatically New from Every Angle...

The Completely New Line of Universal Grinding Machines



Cross Feed Handwheel automatically combines manual operations . . . can be set to simultaneously control headstock, table, and coolant action, and advances and retracts wheel. You simply move handwheel counter-clockwise to start, and return it to original position to stop.



Completely Universal Wheel Spindle Head with instantly available Internal Grinding Spindle permits either external or internal grinding in any desired horizontal position. Accurately graduated compound swivel permits settings for combination straight and taper, or double taper grinding (both external and internal) with only one set up.

Grinding Capacities

Size	Swing	Centers take Nom.	Max.
1*	10"	20"	22¼"
2	14"	30"	33¼"
3	14"	40"	43¼"
4	14"	60"	63¼"

No. 1 machine illustrated

4 Completely New Universal Grinding Machines

In recent years, the broad gap between conventional universal and single-purpose grinding machines has been a serious handicap for many manufacturers. To bridge this gap, Brown & Sharpe now offers a line of completely new Universal Grinding Machines. These machines allow you to instantly combine separate manual operations into automatic cycles for many production applications . . . as well as handle the infinite variety of precision grinding work usually encountered in toolrooms and job shops. Many new and exclusive features provide exceptional grinding flexibility, rigidity, and accuracy.
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Brown & Sharpe

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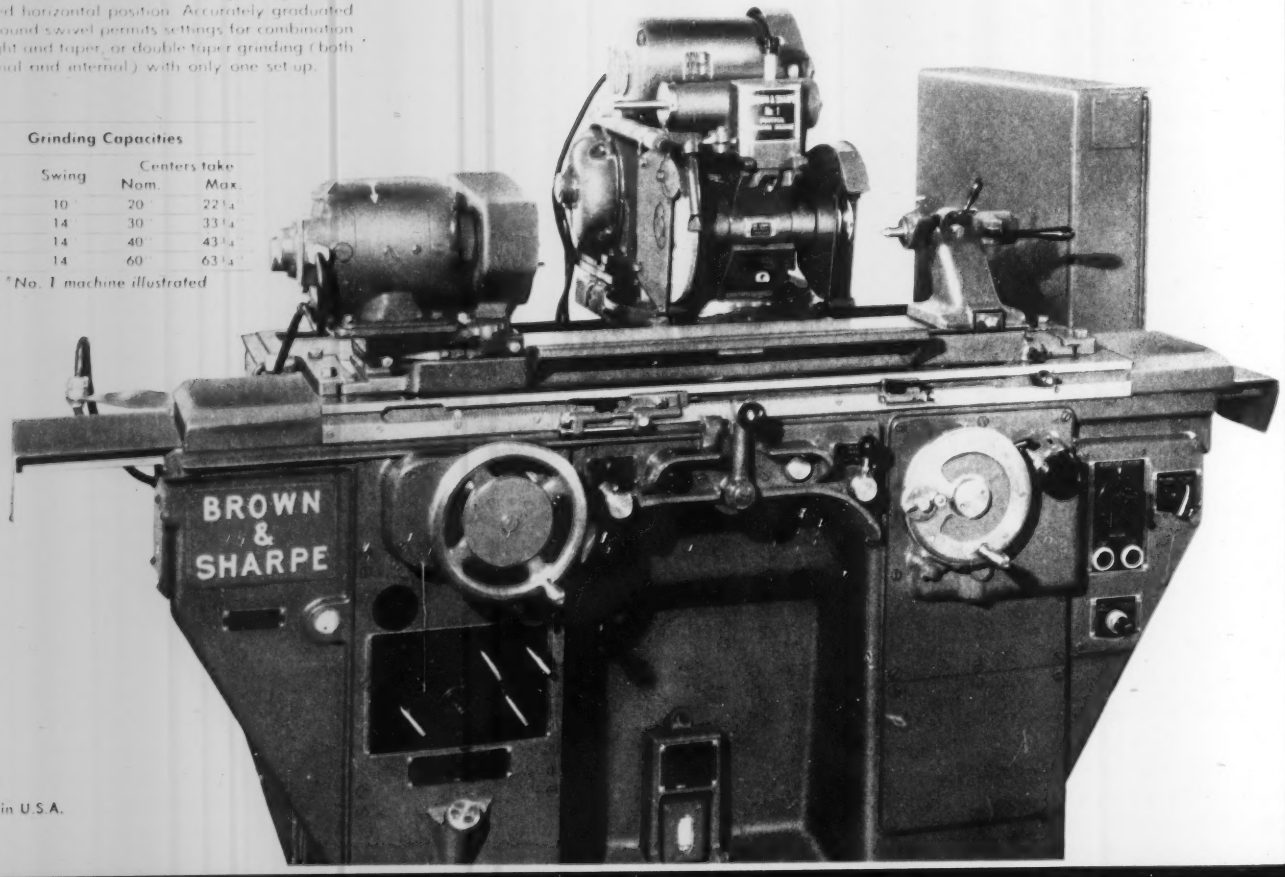
Machine Tool Accessories • Machinists' Tools • Electronic Measuring Equipment
Johansson Gage Blocks • Permanent Magnet Chucks • Pumps

BROWN & SHARPE MFG. CO. PROVIDENCE 1, R. I., U.S.A.



Printed in U.S.A.

2 to 16 volts, 4 to 0.7 microfarads respectively. Another, larger capacitor—$1\frac{1}{2}$ inch long—with similar characteristics and the same voltage range, but with 8 to 1.5 microfarads, has also been announced as available.

Good for Cold—GE engineers said that, while temperatures below minus 20° C will result in further loss of capacitance, the new units continue to be operable and will often give satisfactory values at much lower temperatures.

At 10 volts or above and at minus 55° C, the capacitor will maintain at least 65 per cent of its 25 degrees C value, according to advance tests. It is also possible to obtain satisfactory performance above 50 degrees C with some life restrictions, the engineers added.

Units are recommended for nonresonant, non-critical applications such as coupling, by-pass and filtering, where bulk capacity is useful.

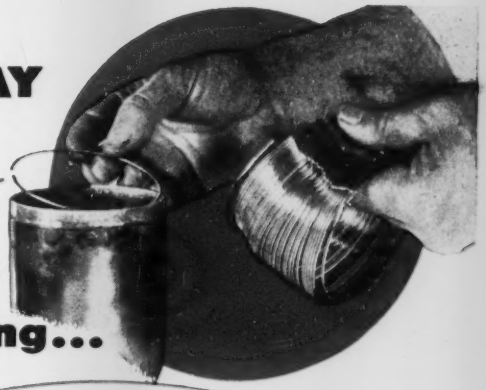
Gold Rupture Disks Perfected

Development of a low-pressure rupture disk from gold has been successfully accomplished by Baker & Co. Inc., Newark, N. J. The company, a member of the Engelhard Industries group, is a leading refiner and worker of precious metals.

Rupture disks from other precious metals, chiefly platinum, as well as non-precious metals have been produced by the company for 20 years. The hitch was to make a disc that would burst consistently at low pressure and still offer the benefits of precious metal while at the same time being economical. Because gold is softer than the platinum metals, potential advantages of low-pressure disks from this metal were obvious.

The gold disk was originally designed for a specific chemical operation where a bursting pressure of 18 pounds was required. It has a 4-inch working diameter and is of 0.002-inch normal thickness.

Precious metal is immune to chemical attack, and can be depended upon to burst no matter how long its length of service, especially in the outdoors under corrosion attack.



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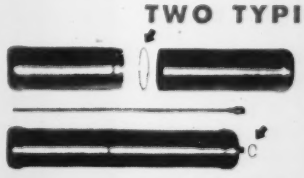
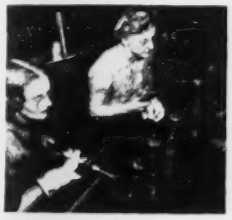
ALLOY PREPLACEMENT is a key factor in the tried and proved EASY-FLO and SIL-FOS low-temperature silver alloy brazing formula that gives you *any brazing production you want* at surprisingly low cost. It's a simple abc formula... where a = assembling parts with EASY-FLO or SIL-FOS *pre*placed at the joints... b = using a fast heating method such as oxyacetylene torch, furnace, electrical induction, gas-air burners, etc.... c = devising a production set-up that keeps assemblies moving steadily to and through the heating station. This formula eliminates the human element from the actual brazing. It assures fast, reliable production with unskilled labor.

EASY-FLO and SIL-FOS are available in rings, washers, shims and other preformed shapes to suit specific joint requirements.

TWO TYPICAL EXAMPLES



NAVY BUZZER CASE COVER
8 posts and gasket brazed to cover with EASY-FLO wire rings preplaced. Assemblies go thru furnace 1500 a day.



INSECTICIDE BOMB
Steel shell stampings and copper vapor tube joined with rings of EASY-FLO preplaced. Two girls turn out 120 bombs per hour.

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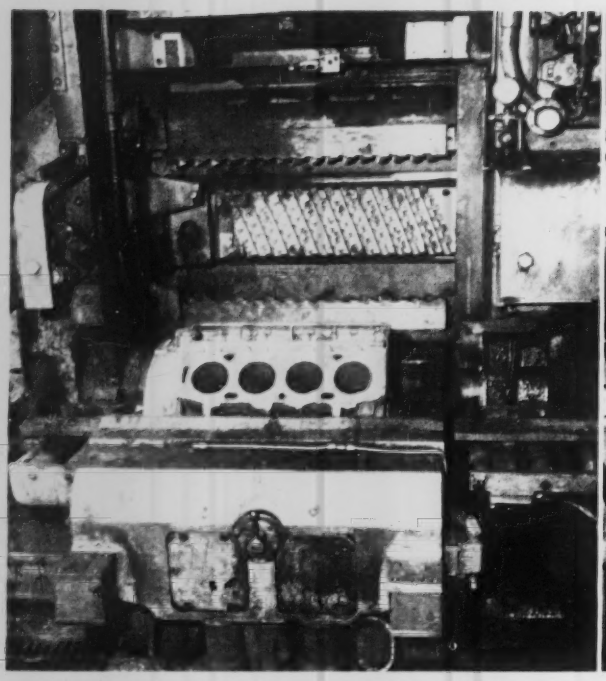


Fig. 1 Crankcase in the fixture is ready to have gasket surfaces of cylinder blocks and side locating pads broached. Job is done after rocking fixture up 90 degrees

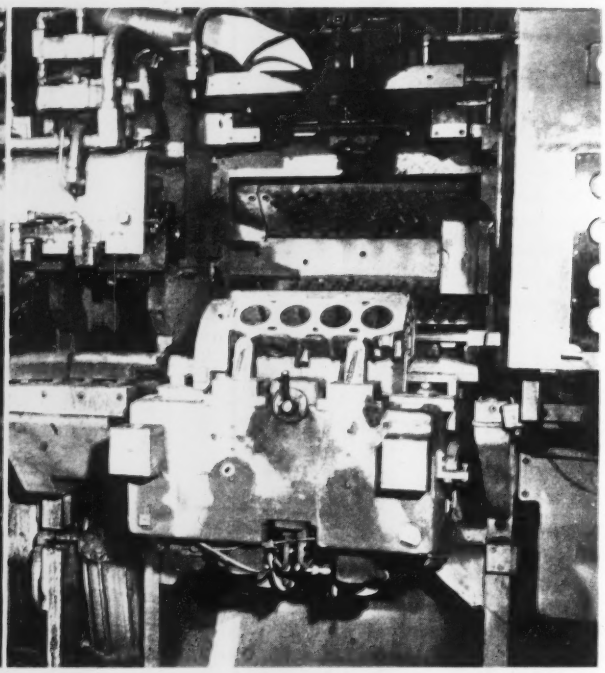


Fig. 2 Crankcase as it appears after first broaching operation. It has been raised to ejection position after the fixture has rocked back to the unloading position

Two Big Broaches Do Job Of Many

One uses 840 separate tools on the horizontal slide driven through rack and pinion by 200-hp motor. Cutting is done in both directions with help of rocking fixtures

By STANLEY J. WHITE
Superintendent, Engine Plant
Buick Motor Division, GM
Flint, Mich.

SINCE Buick Motor Division completed its plant for producing the new V-8 Buick engine, one of the major installations has been that for broaching surfaces of the cast iron crankcase. Job requires two huge machines but they do as much work as a long row of comparatively old milling machines that were set up to handle the same machine work on a temporary basis until the broaches could be built and installed.

Crankcases include two banks of four cylinders with axes 90 degrees apart cast integrally with the upper half of the case, which contains seats for all main bearings. Design is such that the broaching cuts are all made parallel to the crankshaft axis.

Starts Here—Fig. 1 shows portions of the first of the two machines that finish the upper or gasket faces of the cylinder blocks and at the same time face off side locating pads. To do this job, the casting is advanced on a roller conveyor and is located in the fixture shown in Fig. 1 while this fixture is in horizontal position. After the casting is hydraulically clamped, fixture is rocked upward automatically 90 degrees and is there locked in position while one set of broaches, carried on the horizontal slide of the machine is advanced and broaches the faces.

In Fig. 2 is shown one set of the broaches that finishes the gasket faces. Also shown is the casting after the broaching cut has been made and the fixture has been rocked back to horizontal for unloading. Fig. 1 shows broaches that make other cuts in a single stroke of the slide. While the fixture is down, the slide makes its idle return stroke.

Bottoms Up—There is only one broaching station on the first machine but there is also a turnover to invert each casting so that it is advanced to the second machine bottom up and ready for the cuts to be made in producing half round bearing seats, "rail" faces, bear-

ing gap width (side faces), "snap fit" faces besides the step and main bearing cap seats.

For these cuts, location is from surfaces finished in the first broaching machine. In Fig. 3 there appears, close up and rocked to its horizontal position, the first of two fixtures of the second machine holding a casting on which the first cut has been made. For this cut, the casting is locked hydraulically after which the fixture is rocked upward 90 degrees to bring the casting to broaching position. There, the fixture is locked while one set of broaches finishes the top face, bearing seats and bearing clamp lands in one pass. Then the casting is unlocked and raised to position for transfer to the second station.

Second Fixture—Fig. 4 shows the case after the initial cuts have been made and the fixture has been rocked back to its horizontal position. At this and adjacent stations there are chutes into which the chips fall and from which they drop onto and through a floor grating. Below this grating is a chip conveyor which is a part of the chip recovery system of this plant.

To the left of the first fixture, shown in Fig. 3 and at right in Fig. 4, there is a transfer device into which the crankcase is pushed from the first broaching fixture after cuts in the latter are completed. When the casting is in the transfer, the latter is automatically elevated. This brings the crankcase to the proper level for loading it into the second fixture which is shown rocked upward to broaching position at top left in Fig. 4.

When this second fixture is rocked down to loading position and the completely broached case is ejected, the one just elevated is pushed into the fixture and is locked in broaching position. This is in line with the second set of broaches which is on the same slide as the first set but at higher level.

No Idle Strokes—After the higher fixture is locked, the slide makes its return stroke and the second set of broaches makes its cut in a direction opposite to that for the first set. Thus, the slide makes no idle strokes as one of the two sets of broaches it carries cuts in each direction. Of course, the set not cutting clears the casting that is in broaching position because it is at a different level.

Naturally, such a setup necessitates a sequence of events that are positively synchronized with slide motion and that involve interlocks so arranged that the fixtures are used alternately, one being open while the other is in broaching position. Only one operator is required. All shifting of castings is done automatically and the operator merely moves the fixture-locking levers.

840 Tools—All tools have carbide tips and many of them are in standard holders having screw adjustment to set them at correct height. Roughing tools are staggered and make only narrow cuts but finishing cuts are made by tools that cover the whole width of the faces they cut. All tools are exposed and are readily accessible at the end of each stroke.

When castings issue from the second station of the second machine, all faces that can be broached are finished except the half rounds at bearing seats. These are left with some metal to be removed in a boring operation after caps have been bolted in place. With the two broaches, 100 to 120 crankcase castings an hour are finished, and only four men, two of whom are helpers who assist in shifting castings to and from the machines, are required. In the temporary setup previously used 18 men were required and only 25 castings an hour were processed.

Both of the broaching machines have long and heavy slides for the broaches and yet require no clutch between the driving pinion and the motor and no mechanical friction brake to decelerate the slides at both ends of their stroke.

This is due to the fact that each machine has a 200-hp dc motor that is "plugged" (or caused to buck a reversed field) to produce a magnetic braking effect near the end of each stroke. Absence of friction clutches and brakes is expected to greatly reduce maintenance expense on the automatic machines.

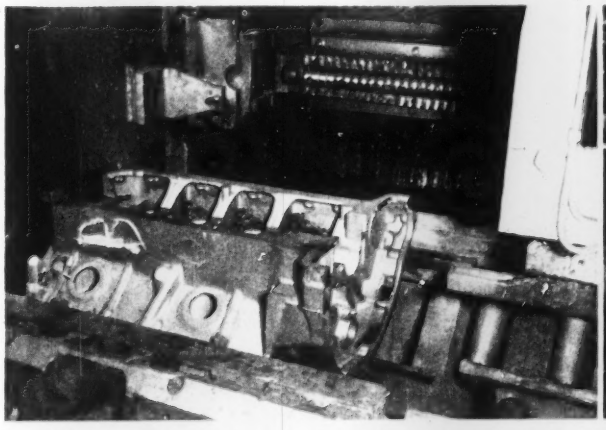


Fig. 3—Crankcase after first cuts in the second machine. It is ready for shifting into transfer device that moves the casting into the second broaching fixture

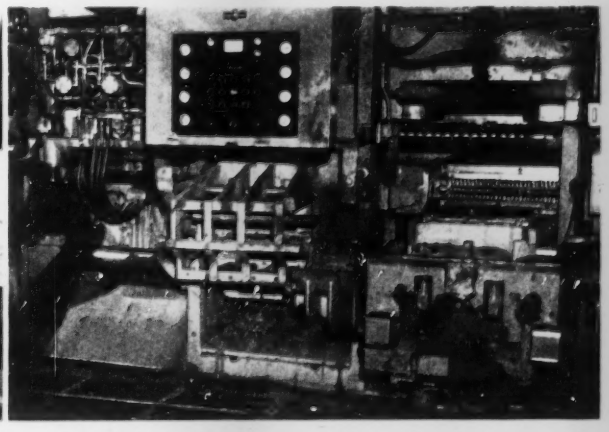
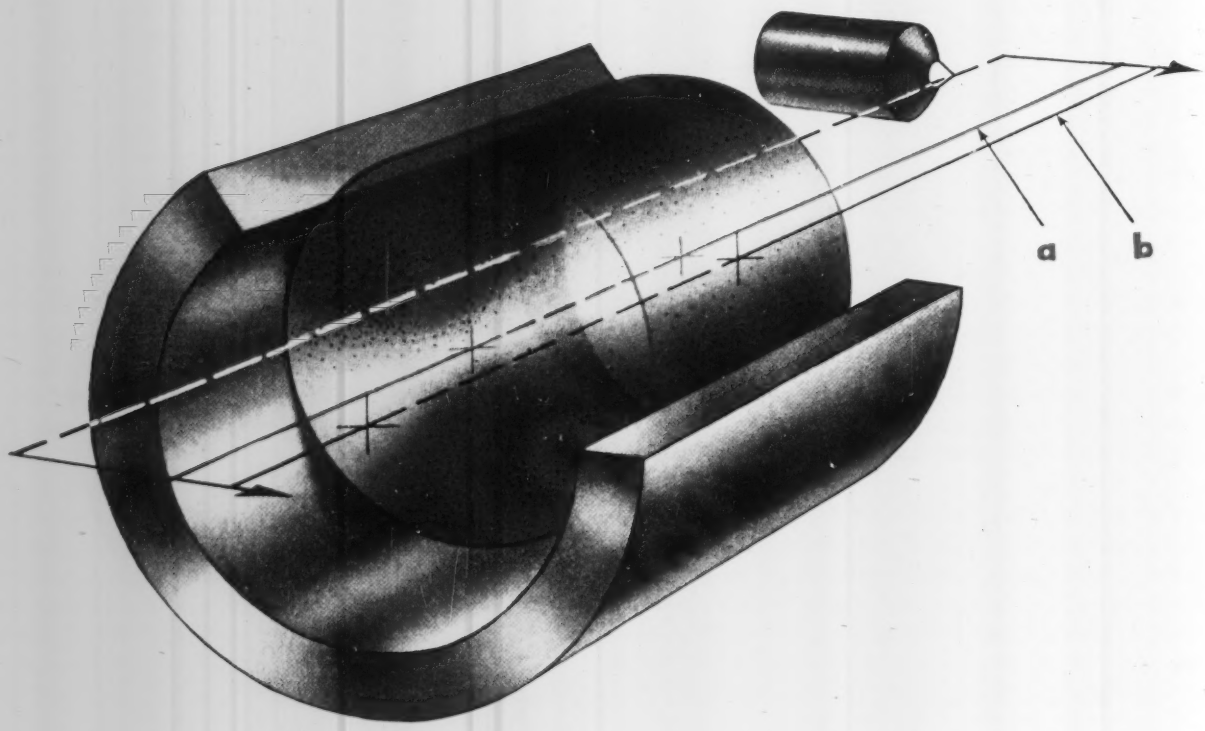


Fig. 4—Second broaching machine with crankcase ready for ejection from fixture at right to transfer device, center. Transfer will have to elevate for next fixture

alignment

for better internal grinding

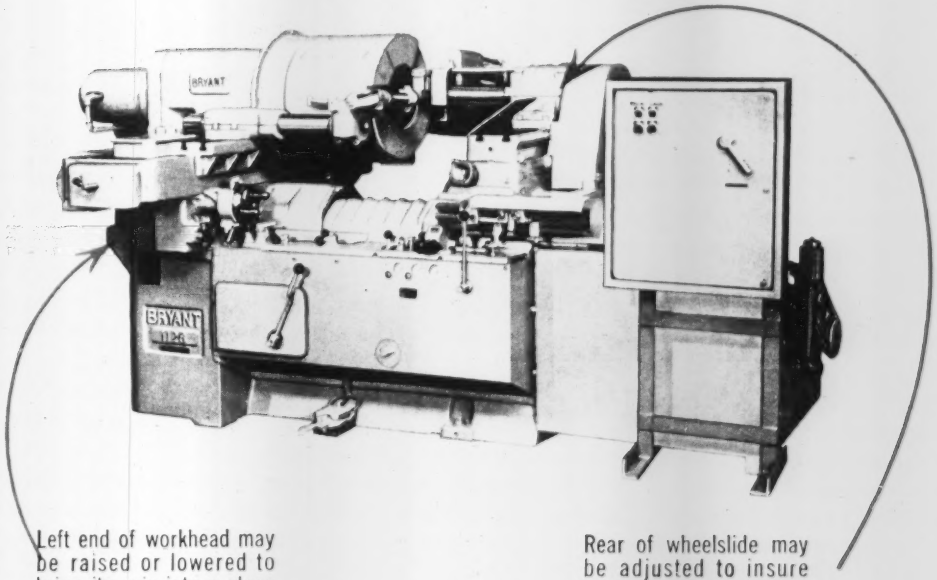


THE heart of the internal grinding process is the line of contact between the wheel and the work. This contact line must be straight for the full length of the wheel and the full length of work as the wheel traverses. If the contact is not a straight line, the internal grinder is "out of line". Improper alignment may show up in the work as incorrect hole geometry (bell-mouth or taper) and poor surface finish. In addition, excessive wheel wear and poor wheel action may result.

Several elements contribute to the straightness of this line of contact: first, the path along which the wheel is traversed "a" must be a straight line; second, the axis of the wheel must lie in a plane parallel to the wheel path "a", and third, the axis of the work "b" must be parallel to the wheel

path "a". For production grinding, the diamond must lie in the plane established by the wheel axis and the work axis.

Perfect alignment means that the slides must be straight and true, the wheel and work spindles must be in line and "zeroed" for center heights and the diamond must be on "dead center" of the wheel. A full, straight line of contact will extend wheel life, improve wheel action, and will assure correct geometry and required finish.



Left end of workhead may be raised or lowered to bring its axis into a plane parallel with wheelslide bar.

Rear of wheelslide may be adjusted to insure straight line motion of the wheel.

This heavy-duty, semiautomatic machine, with hydraulic controls, has a 26" swing and will grind holes with a maximum depth of 12". Although designed for large, heavy work, a selection of wheelheads is available to grind holes as small as 1" in diameter. The extremely rugged bed provides the strength and rigidity necessary for vibrationless operation. The workhead has two positions, one for grinding and a forward position for ease in loading and checking large work. The wheelhead is adjustable to grind work up to 15° included angle. The Bryant workhead and wheelhead slides are anti-friction to provide extremely accurate grinding and sensitive control.

Write for "Alignment" booklet which gives complete details on this interesting subject. Also ask for booking form on new sound, color movie — free showings arranged for engineering groups.

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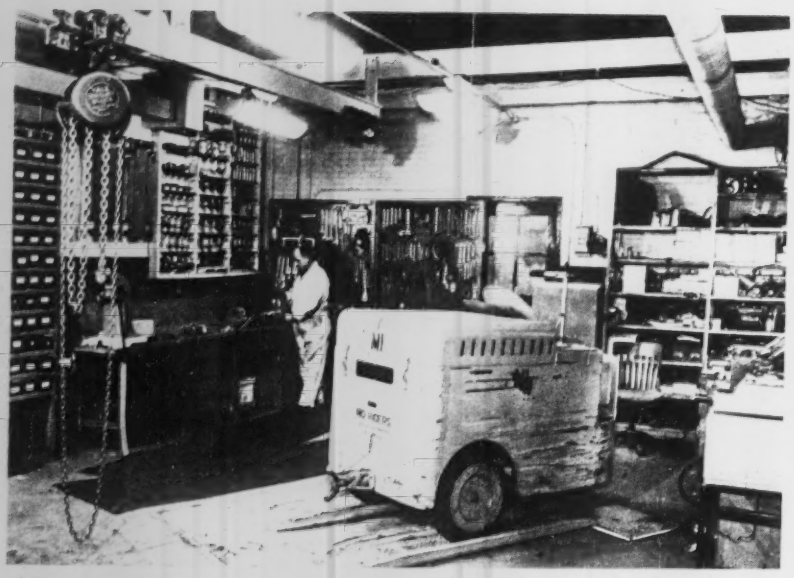


Truck maintenance department at Studebaker occupies this space adjacent to the battery room. Good organization, equipment, lighting are obvious throughout

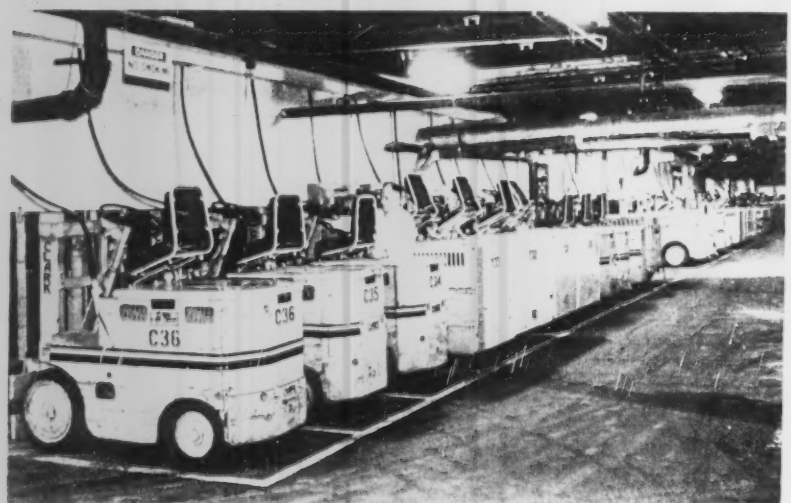
TRUCK MAINTENANCE

Charge Timetable Makes Fleet Tick

OPERATION of Studebaker Corp.'s Parts and Accessory Division warehouse at South Bend, Ind., banks heavily on a fast, flexible material handling system.

To this depot comes every kind of automotive part and small subassembly. In its bays and on its racks must be stacked and stored such varying loads as sheet steel fenders big but light and tote boxes filled with high-density parts like pins, bushings or axle shafts. Parts are moved in from street trucks, spotted in bays, and moved again when reloaded for export and domestic shipment.

Requirements include precise, rapid handling and stacking of parts after routes ranging from 1000 to 2000 feet round trip. In such cases as ignition components, carburetors and other precision assemblies, the parts require gentle handling as well.



This imposing line of industrial trucks, each in an allotted space, is seen at the charging stations in the battery-maintenance parts depot. Fleet totals 38 trucks

Economic Necessity — With 38 trucks in constant use, the battery maintenance program became as vital to plant economics as it is to operation. Accordingly, Studebaker's plant superintendent and engineers of Gould-National Batteries Inc., set up charging and maintenance practices aimed at maximum battery life. Their success is illustrated by the fact that only one spare battery is required for the large trucks.

Most of the batteries are 18-cell XLZ-19 plate for large fork trucks, with three sets of 6-cell XLZ-21 plate batteries on hand for the Worksaver trucks. One set of 6-cell XRZ-9 plate battery is maintained for the Transtacker. Plant operations are based on 8-hour work days. New automatic charging equipment is made by Electric Products Co., Cleveland.

Each circuit offers two charging leads so two batteries can be plugged in simultaneously. All of the large batteries are sequence-charged. The generator in use is large enough to charge half the batteries at one time.

Charging Is Automatic—As the truck operator parks his truck for the night, he attaches a charging cable to the battery charging plug. One battery goes on charge. When it reaches gassing voltage, automatic relay equipment switches charge to the other battery. As the latter reaches gassing point, both batteries are cut in for a final 3-hour finishing charge.

The Transtacker battery, 400 amp-hour capacity, is charged on a separate small motor-generator set, as are Worksaver batteries.

Records Are Thorough — While each truck is plugged in at its stall, a plant maintenance man tests its battery, recording specific gravity and amount of water required. This man's daily record goes to the superintendent's office and is posted in a permanent ledger on a form prepared by the battery manufacturer's field engineer. This sheet provides space for recording man-

hour operations, plus all pertinent data bearing on condition of the battery.

Once each month battery men remove a battery from one of the large trucks and install the spare. Thus, it requires 33 months to complete rotation throughout the truck fleet. Also, battery men vary each month the number of the pilot cell used for testing.

Scheduling Looks Ahead—Long life is augmented by putting batteries on charge when hydrometer readings drop to between 1.200 and 1.140, instead of waiting until overdischarge is reached. All batteries are placed on charge Thursday nights, given finishing charges Friday nights. In this way no Saturday work is required on the part of the maintenance crew.

Specific gravity readings are taken on alternate weeks, after the Friday charging. At the same time, batteries are checked for water level. Entire program is worked out so the minimum number of batteries will need charging each night and often batteries can operate through two to three full days.

Speed Measuring By Resonance

Bulletin 31-P8 of James G. Biddle Co. is a publication dealing with the measurement of speed by resonance or vibration.

The report tells how a series of tuned steel reeds can indicate speeds more accurately than most mechanical tachometers and speed indicators. There is no maintenance involved, no moving parts to be lubricated or to wear out.

Concrete Sealer Speeds Use

A sealer for newly-laid and repaired concrete floors which serves as a protective coating to prevent dusting and spalling is available from the West Disinfecting Co., Long Island City, N. Y. The new sealer permits residual moisture to rise out of the new concrete. Protected, the new floor can be put to use sooner.

No etching is required—the sealer can be applied with excellent results without prior acid treatments. A simple coat is all that is required to protect most new floors. One gallon of the sealer covers from 400 to 600 square feet.

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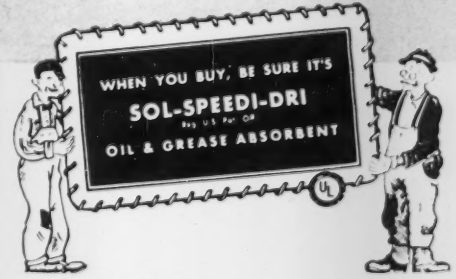

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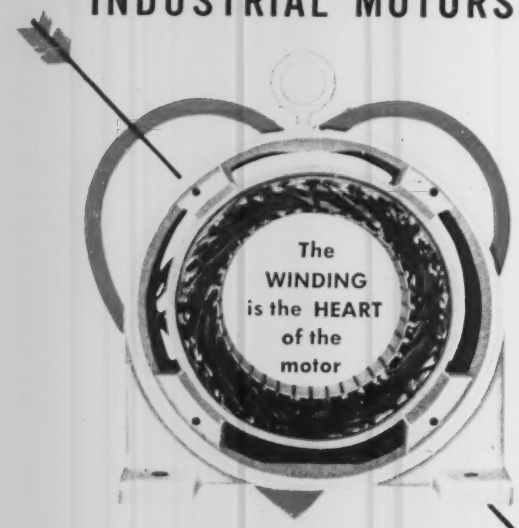
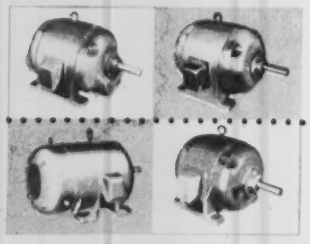


Every Electro Dynamic motor is built with
EXTRA INSULATION in stator slots and between phases
EXTRA IMPREGNATIONS and bakings of the wound stator
EXTRA HIGH-FREQUENCY TESTING of insulation between turns

WRITE TODAY FOR CATALOGUE NO. 1068

From 1 to 250 Horsepower (N.E.M.A. STANDARDS)

One-piece cast iron frames.



Extra large "free-flo" air channels.

Permanently aligned cast iron brackets.

Liberal size grease lubricated bearings.

Also a complete line of Direct Current motors and generators

ELECTRO DYNAMIC
DIVISION OF GENERAL DYNAMICS CORPORATION
BAYONNE, NEW JERSEY

Tips on Carbide Tool Use

Lapped or superfinished cutting tool for roughing operations is wasteful. Has no effect on life

DON'T use a lapped or superfinished cemented carbide cutting tool during roughing operations in machining steel. It's a waste of man-hours to provide such a finish on a tool, according to Carboloy Department, General Electric Co.

Surface finish on a carbide tool tip has little effect on tool life for average machining on steel. During roughing operations, carbide tools perform satisfactorily whether they are ground on a diamond or silicon carbide grinding wheel—or even if left with the surface in as-sintered condition.

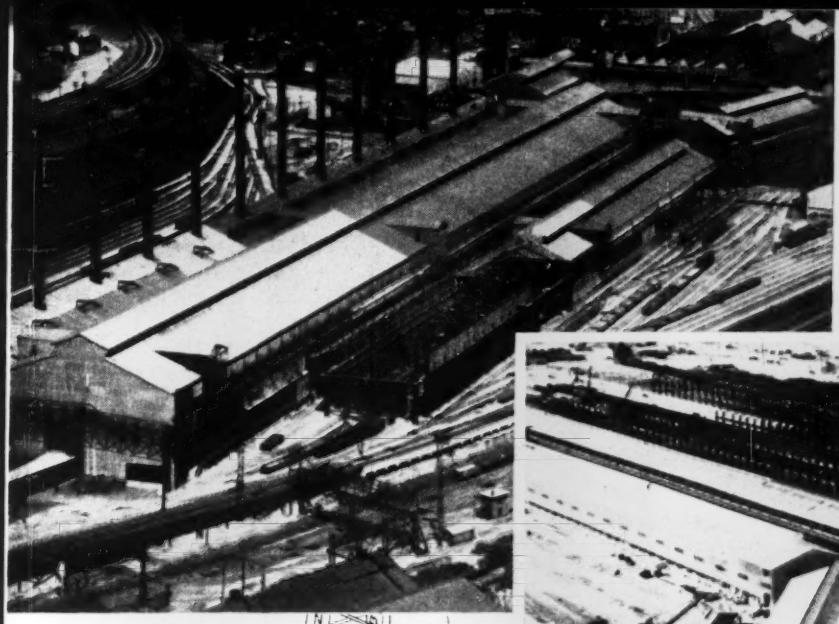
Finishes Attainable—As-sintered carbide tools provide a tool surface finish of 30 plus micro-inches. Those ground on silicon carbide grinding wheels provide 15 plus mirco-inches. Eight to fifteen micro-inches are obtained with diamond grinding wheels, and lapping and super finishing reduce surface finish to 0.5 to 5 micro-inches.

Tests conducted at Carboloy indicate that a lapped or superfinished tool fails more rapidly in making roughing cuts than one ground on a diamond wheel. This is because the lapped surface over which the chip slides offers more area contact, increasing both the rate of heat transfer from chip to tool tip and friction due to sliding.

Lapped Edges — Tools employed for finishing and precision finishing aluminum, magnesium, etc., must have a good surface finish. Lapping of the top face and cutting edges is a must for good tool life.

For a precision finishing operation involving steel, it is necessary to finish grind the tool cutting edges with a diamond wheel. Long-run jobs, using quick-change tool holders, require the use of a duplicating type grinder to control uniformity of the cutting tool shape. These duplicating grinders often use a 400 grit resinoid bonded diamond wheel. But in this operation, very little stock is removed.

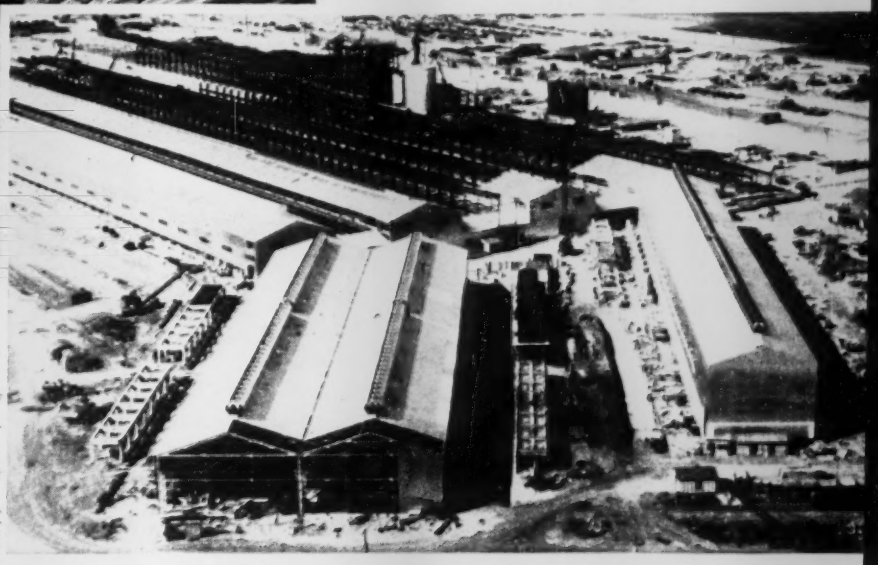
Rough grinding of precision finishing tools may be done by off-hand grinding with a 100-grit silicon carbide or diamond wheel.

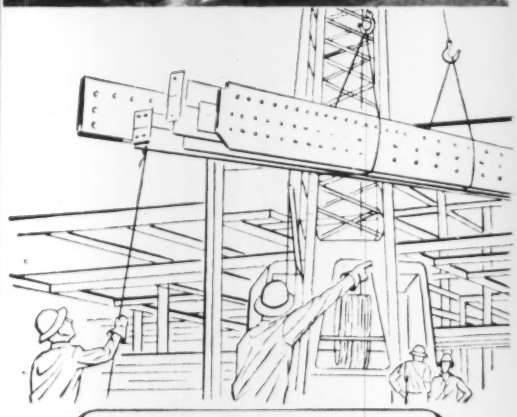


JONES & LAUGHLIN STEEL CORPORATION'S multi-million dollar expansion project on Pittsburgh's South Side.

• • •

REYNOLDS METALS COMPANY, San Patricio Plant, Corpus Christi, Texas, for increased production of aluminum.





AMERICAN BRIDGE

lends a helping hand

as nation's essential industries continue to expand!

Less spectacular than city skyscrapers, but just as important to our nation's defense and economic growth, are the unheralded industrial buildings which have been built or are now under construction all over this great country of ours.

Of the thousands of such steel-frame structures built by American Bridge, we are perhaps proudest of those we have done, or are now working on, for vital industries. Included in this group are many important metal producers.

To be selected by these leading steel and aluminum producers is a splendid tribute to the engineering, fabricating and erecting know-how of the American Bridge organization.

It is also your assurance that American Bridge has the fabricating facilities, erecting equipment and skilled personnel to handle any type of steel-frame construction with exacting precision, thoroughness and speed . . . any time, anywhere.

If you would like to know more about the advantages of American Bridge fabricated and erected steel construction, call our nearest office.

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  Pittsburgh, Pa.
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- **REPUBLIC STEEL CORPORATION**
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- **UNITED STATES STEEL CORPORATION**
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UNITED STATES STEEL EXPORT COMPANY, NEW YORK

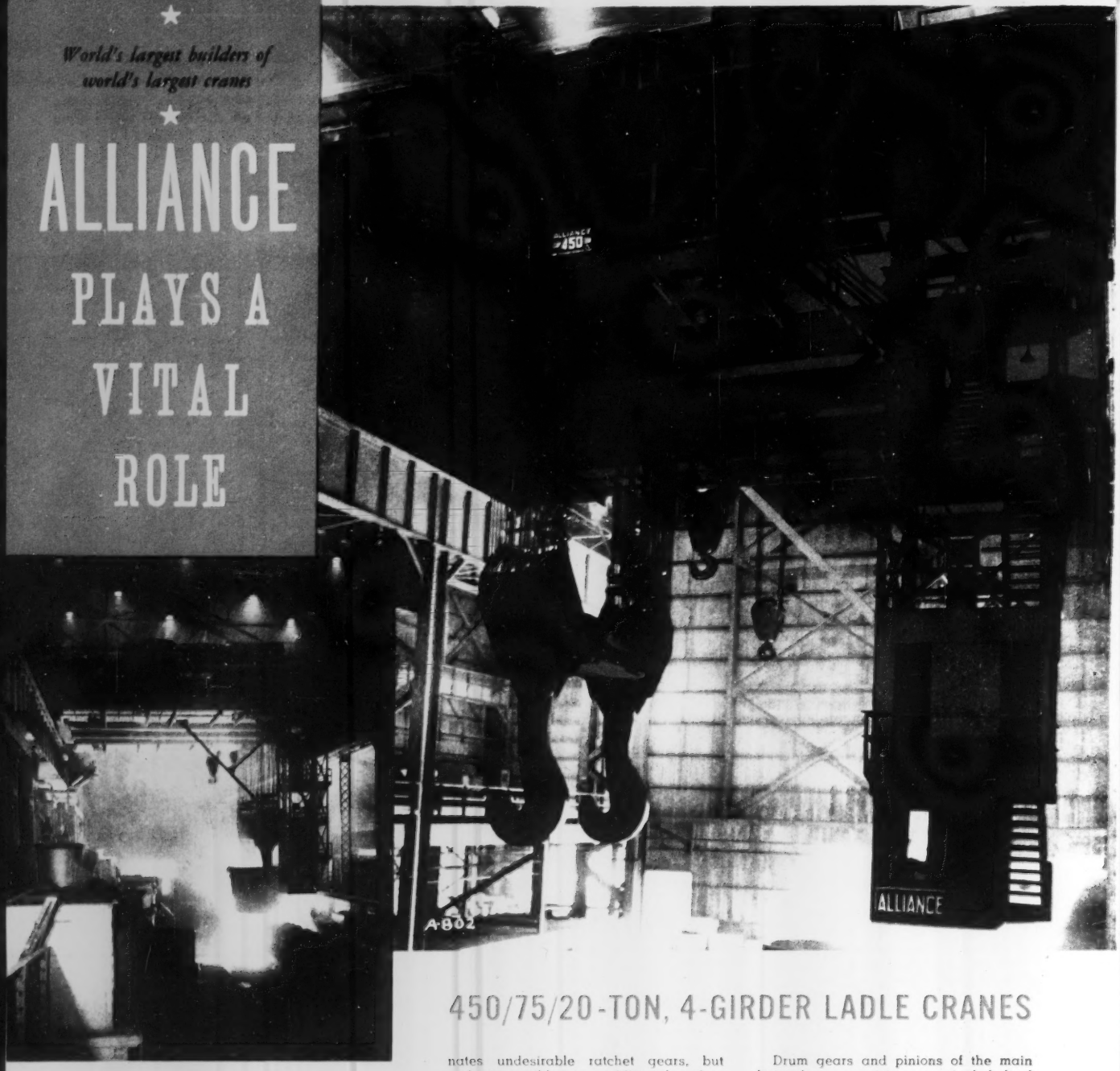
AMERICAN BRIDGE

USS

UNITED STATES STEEL

World's largest builders of world's largest cranes

ALLIANCE PLAYS A VITAL ROLE



450/75/20-TON, 4-GIRDER LADLE CRANES

When the engineers from the Construction Engineering Bureau of the United States Steel Corporation were in the market for the world's largest ladle cranes for Fairless Works, they consulted The Alliance Machine Company, whose experience and know-how qualified them for this important task.

One of the cranes Alliance designed, which is now operating in the Fairless Works, is this 450-ton ladle crane. Having a 61'6" span, this crane is equipped with a 2-motor, synchronized worm drive and double-drum interlocked type main hoist. The synchronizing shaft employed in the gearing scheme not only eliminates undesirable ratchet gears, but makes possible an additional safety feature in case one hoist motor fails. Under this condition, both worms are driven by the remaining motor. All gearing functions continue as though operated with two motors. In case of hoist motor failure on the conventional drive **without** the synchronizing shaft, hoisting is accomplished by **only one** set of gears, thus imposing a double load on active gearings, as the second drum is then driven through interlocking drum gears.

Hoist gearing is so proportioned that full crane capacity can be lifted by one motor without exceeding the quarter-hour rating.

Drum gears and pinions of the main hoist have precision-cut, single-helical teeth. This feature, in cooperation with the worm drive, provides vibrationless operation on either high- or low-speed hoisting and lowering.

All gears of this new Fairless Works crane are fully enclosed and operate in a bath of oil, assuring long life and low maintenance. The 4-part safety rope system affords the highest degree of safety in rope reeving.

This crane is equipped with a 5-story cab, the operator's compartment being air-conditioned.

Consult Alliance Machine Company engineers when you have a heavy material handling problem.

THE *Alliance* MACHINE COMPANY

MAIN OFFICE
ALLIANCE, OHIO

PITTSBURGH OFFICE
1622 OLIVER BUILDING, PITTSBURGH, PA.

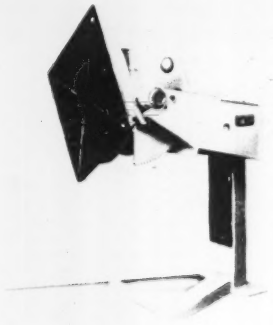
NEW PRODUCTS and equipment

Reply card on page 121 will bring you more information on any new products and equipment in this issue

Welding Positioners

. . . with variable speed drive

Three heavy-duty positioners for automatic or manual welding are designed with special variable speed drive. Of differential type, with all components mounted on ball bearings, this drive provides stepless



speed change from 0 to predetermined top speed. An accurately-calibrated handwheel or electric remote speed control is provided.

Table on these positioners is driven by a spur gear and pinion for minimum backlash and accurate adjustment. Table tilting speed is 135 degrees in 40 seconds; table height is adjustable in 6-inch steps for handling various sizes of work. Positioners are built in 2500, 3000 and 6000-pound capacities. Worthington Corp., Dept. ST, Harrison, N. J.

FOR MORE DATA—CIRCLE REPLY CARD NO. 1

Interchangeable Gage Heads

. . . require one gage body

A feature of the manufacturer's dial bore gages is development of interchangeable gage heads. All standard heads for measuring O ring grooves, snap ring grooves, pitch diameters of internal threads, small bores and most special gage heads are now interchangeable on one gage body.

Thus it is feasible to use precision checking equipment on development projects, short runs or con-

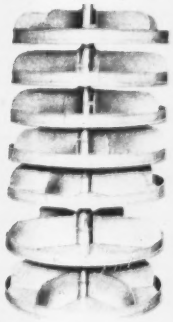
tract work where formerly an expenditure for a complete gage was not justified. Rimat Tool Co., Dept. ST, 21 W. Dayton St., Pasadena 2, Calif.

FOR MORE DATA—CIRCLE REPLY CARD NO. 2

Revolving Storage Bins

. . . move on ball bearings

These revolving bins are complete storage units, applicable for bulk stock, parts, nuts, bolts etc. Shelves



revolve easily in either direction on ball bearing rollers. Each has five permanent dividers and continuous label holders. Additional dividers can be inserted.

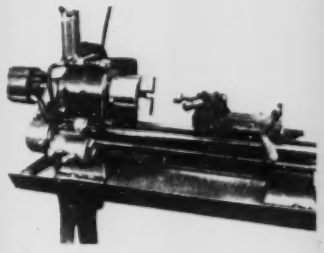
Shelves are stabilized to prevent sagging when unevenly loaded. Broad base prevents tipping. Lyon Metal Products Inc., Dept. ST, Aurora, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 3

Air Collet Closer

. . . converts to air chuck

This pneumatic collet closer can be converted to air chuck operation in 3 minutes. The same hollow cen-



ter air cylinder operates collets for bar stock and air chucks up to 8 inches.

The unit makes it simple to switch from chucking to collet work with practically no shutdown time. There is about 2500 pounds thrust on the drawbar at 100 psi, with maximum travel of $\frac{1}{2}$-inch. Normal operating pressure is 60 to 80 psi. Maximum stock size through the cylinder is 1 inch. Wil-Numat Corp., Dept. ST, 3713 S. Robertson Blvd., Culver City, Calif.

FOR MORE DATA—CIRCLE REPLY CARD NO. 4

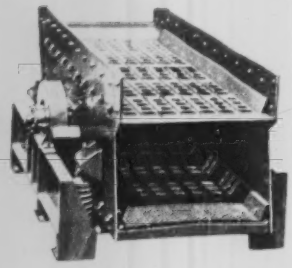
Vibrating Screens

. . . single, double decks

Line of vibrating screens is available in single deck for scalping and two-deck model for scalping or sizing. In the two-deck sizing screen both decks are wire mesh. Single-deck screen has $\frac{3}{4}$-inch punched plate deck. In the two-deck scalp-

ing screen, top deck is ½-inch punched plate, bottom deck is wire mesh.

Main frame on all the 4-foot screens is redesigned to include an



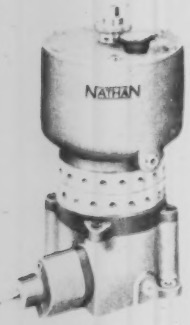
18-inch car channel reinforced with 8-inch cross beams. Remaining widths in the line, 5 and 6 feet, have been redesigned to include 18-inch I-beams reinforced with 8-inch cross beams. Vibration is reduced to a minimum without sacrifice of screen pan action. Pioneer Engineering Works Inc., division of Poor & Co., Dept. ST, Chicago, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 5

Automatic Lubricating System

. . . can serve 36 points

This automatic precision lubrication system, called Lo-Flo lubricator, is capable of delivering minute quantities of lubricant to as



many as 36 individual points, regardless of difference in pressures required. It is available in 18 or 36-feed models, with or without group regulation of feeds.

Lubricator is a flexible unit with flow rate per feed ranging from 2.3 cu in. per hour to less than 1 cu in. per 700 hours. It can employ a variety of lubricants from light oils to light grease at 60 F.

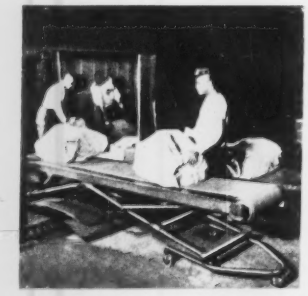
Unit is available with a numbe of drives, including rotary shaft, built-in ratchet, solenoid and pressure pulsation of liquids or gases. Nathan Mfg. Corp., Dept. ST, 4' E. 106th St., New York 29, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 6

Freight Loader, Unloader

. . . 11, 13, 15-foot sizes

This unit was developed in collaboration with a large eastern railroad, is ideal for loading and unloading freight or trucks. It is available in 11, 13 and 15-foot sizes, with ¾-hp motor and a 16-inch



wide belt. Motor has electrical controls for two-way operation. The unit can be raised by hydraulic jacks at either end.

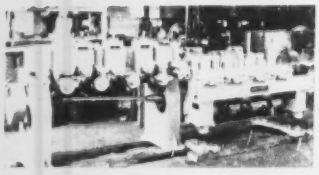
A double end belt booster can be used alone or in conjunction with roller or wheel conveyors for loading or unloading purposes. Harry J. Ferguson Co., Dept. ST, 115 West Ave., Jenkintown, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 7

Variable Center Straightener

. . . two-plane overhung mounted

Overhung-type rolls afford rapid roll change from one workpiece shape to another in this two-plane, variable center shape straightener. Extreme rigidity of roll carriers



results from compact design that utilizes alloy forgings mounted by shrink-fit method. Ability of the machine to handle any length bending span is achieved by construction features that allow all rolls to be moved independently.

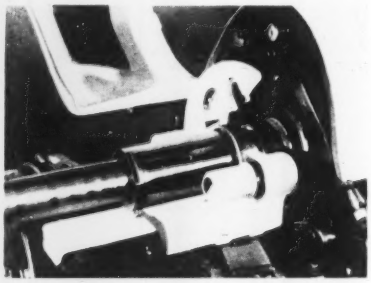
Feeding and re-forming is accomplished by moving one roll directly opposite another. All models are equipped with an electric motor drive that automatically positions one section with respect to the other to accommodate the workpiece. Medart Co., Dept. ST, 3535 DeKalb St., St. Louis 18, Mo.

FOR MORE DATA—CIRCLE REPLY CARD NO. 8

Screw Machine Attachment

. . . handles outsize stock

Extra-capacity pusher with outsize pads and collets permits users of 1¼ and 1½-inch automatic screw machines to handle larger stock. One attachment is required to operate on both the 1¼ and 1½-inch machines, and has same outside diameter as the standard feed-



tube bearing. Attachment is provided with ball bearings and is designed so no wear occurs on feed latch because all play takes place inside the stock-feeder.

The 1½-inch screw machine model, equipped with CAP-X attachment, will handle outsizes of 1-9/16, 1⅝ and 1-11/16-inch, using round collets. Kane Industries Corp., Dept. ST, 1732 N. California Ave., Chicago 47, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 9

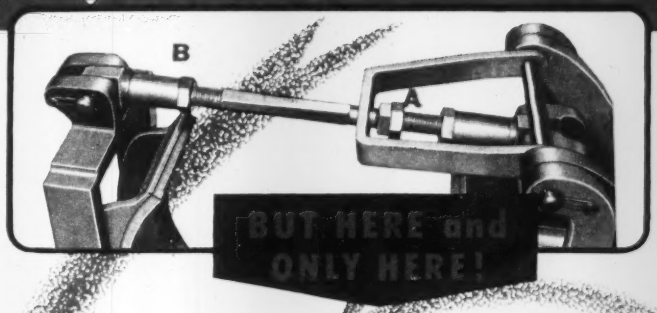
Marking Machine

. . . feeds automatically

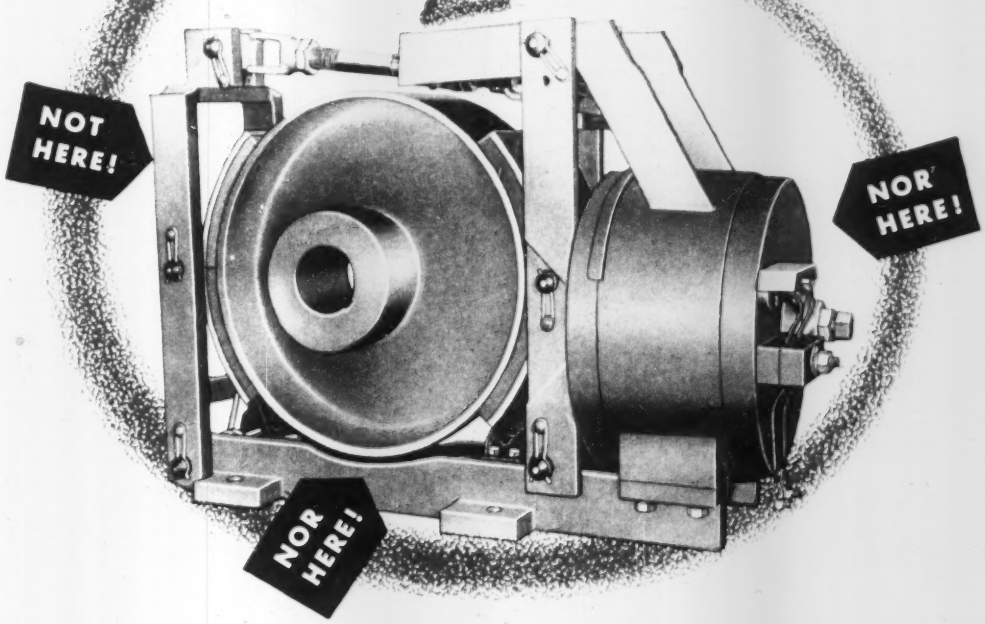
Objects to be marked are fed automatically into this marker, printed and ejected at a rate of 80 imprints per minute. Items are printed when and as needed, eliminating box or label inventory problems on any flat object up to ¾-inch thick.

Automatic feed table has adjustable side gages that are moved easily to accommodate objects 5 x 14 inches. Maximum imprint area

CLARK Bulletin 106 DC SHOE BRAKES need *Only One Adjustment* and that's TOPS!



There is *only* one adjustment ever needed—for lining wear. Simply loosen locknuts A and B. Turn adjustment bar until gauge nut is again flush with gauge rivet. Making this adjustment returns the brake to its original setting, providing correct shoe clearance, air-gap and torque setting.



You don't have to be a contortionist to make the ***ONLY*** adjustment necessary on Clark Bulletin 106 Shoe Brakes. This ***ONE*** adjustment, compensating for lining wear, is made ***ON THE TOP***—not on the bottom, nor on the sides, nor on the ends—***JUST ON THE TOP***—that's where you can see it, and get at it easily.

These are the *only* brakes designed to fit the new 600 series Type Mill Motors . . . They operate on the "nut-cracker" principle, providing equal distribution of forces—and safe, dependable operation.

CLARK Bulletin 106 Brakes are simplest to adjust and extremely easy to install.

Your nearest **CLARK** *representative will gladly consult with you on Brake problems.*

ENGINEERED ELECTRICAL CONTROL

THE CLARK CONTROLLER CO.

1146 EAST 152ND STREET, CLEVELAND 10, OHIO

helping hand
for short handed plants

Fewer hands move more materials faster when a Conco Crane provides the "muscle." That means lower costs. Write today for Bulletin 3000A covering the full line of Conco Cranes, Hoists, Trolleys — each backed by 36 years experience.

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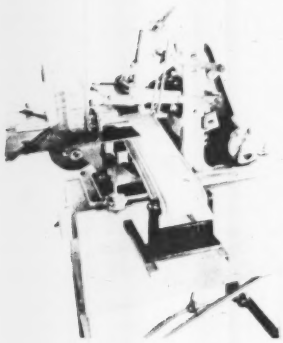
Conco Building Products, Inc.—Brick, Tile, Stone

NEW PRODUCTS and equipment

is 2-5/16 x 6-11/16 inches. The imprint can be located anywhere in an area 5 x 11 inches. Mounted on a



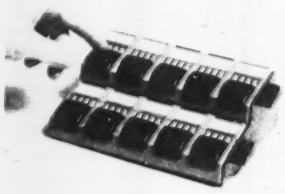
floor stand, the unit occupies 36 x 28 inches floor space. Markem Machine Co., Dept. ST, Keene 40, N. H.

FOR MORE DATA—CIRCLE REPLY CARD NO. 10

Multiple-Unit Reset Counter

. . . quality and stock control

Order, quality, stock and traffic control, plus laboratory analysis, are uses for which this Vary-Tally has been designed. Arranged on



stands in tiers up to six high and twelve wide, as many as 72 individual units can be used to obtain numerical breakdowns of parts, portions, products. Veeder-Root Inc., Dept. ST, Hartford 2, Conn.

FOR MORE DATA—CIRCLE REPLY CARD NO. 11

Powder Lance Dispenser

. . . continuous, adjustable flow

Powder-lancing, which uses high temperature to pierce holes in materials that resist standard oxygen lance, requires continuous, steady flow of air-borne metallic powder through the lance. Oxweld D-9 powder dispenser supplies this flow, at adjustable rates to provide maximum efficiency.

Dispenser has a 200-pound powder capacity, so frequent charging is unnecessary. It delivers pow-

Here's why The A. O. Smith Corp. uses Summerill STEEL PRESSURE TUBING

The A. O. Smith Corporation has found that Summerill Steel Pressure Tubing consistently meets their high quality tubing standards. For Summerill Seamless Tubing withstands internal pressures that would cause other tubing materials to quickly fail. It flares easily, and takes sharp bends in stride without flattening or developing an "orange peel" effect on the bend.

Summerill Pressure Tubing is Quality-Controlled from raw materials to finished product in one of the nation's most modern tubing plants. Only prime raw materials are used. As a result, you can depend on Summerill for top uniform quality of product—regardless of whether you buy a single length or by the carload. *And remember this:* Not one Summerill customer has ever received a "leaker", or reported a pressure tubing failure! Summerill Pressure Tubing is available in lengths up to 38 feet. ● For further details or technical assistance, call or write: *Summerill Tubing Company Division, Columbia Steel & Shafting Company, Pittsburgh 30, Penna.*

IN COLD DRAWN SEAMLESS STEEL TUBING

SPECIFY Summerill AND BE SURE!

SPECIFY

FOLLANSBEE COLD ROLLED STRIP

Leading manufacturers of precision parts are using Follansbee Cold Rolled Strip in coils for all types of stamped and formed products.

The finish, temper and uniform tolerance of Follansbee Cold Rolled Strip make it a highly desirable steel for precision jobs on your presses. Follansbee coils can be supplied with I.D. and O.D. for any production set-up.

Follansbee can give you warehouse type service from the mill providing a continuous supply of custom-quality Cold Rolled Strip Steel from coils to your presses, regardless of forming operations involved.

The Follansbee Steel Representative nearest you will give you full information. It will pay you to discuss your fabricating problems with him today.

FOLLANSBEE STEEL CORPORATION

GENERAL OFFICES, PITTSBURGH 30, PA.

Cold Rolled Strip — Seamless Terne Roll Roofing

Polished Blue Sheets and Coils

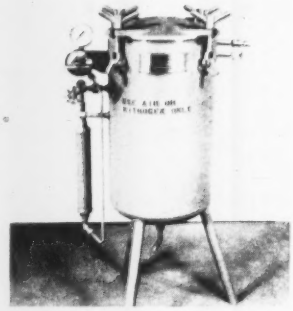
Sales Offices—Chicago, Cleveland, Detroit, Indianapolis, Kansas City, Los Angeles, Milwaukee, Nashville, New York, Philadelphia, Rochester, San Francisco, Seattle, Toronto and Montreal, Canada. Mills—Follansbee, W.Va.

FOLLANSBEE METAL WAREHOUSES

Pittsburgh, Pa. — Rochester, N.Y. — Fairfield, Conn.

NEW PRODUCTS and equipment

der at conveying-air pressures to 100 psi to permit lance use with multiple pipe lengths. Dispenser meets requirements for all scarfing and cutting processes that use



powder. Linde Air Products Co., division of Union Carbide & Carbon Corp., Dept. ST, 30 E. 42nd St., New York 17, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 12

Improved Resinoid Cutoff Wheel

. . . durability ups wheel life

An improved reinforced, resinoid cut-off wheel is introduced by the manufacturer to replace its previous model BFR. Longer life is the principal feature of the improved wheel. Company reports tests show life increased up to a third over the former product's average. Improved BFR wheel shows almost no tendency to fray or split at the face in layers. Norton Co., Worcester, Mass.

FOR MORE DATA—CIRCLE REPLY CARD NO. 13

Optional Punch Press Design

. . . transforms to horn type

Simple redesign of supporting structure can change manufacturer's standard power punch press into horn type. To meet specific requirements, alteration of base arrangement provides means for a

USE A **REPLY CARD**

Just circle the corresponding number of any item in this section for more information.

Yours FOR THE ASKING

TEAR OUT CARD, FILL IN and MAIL TODAY!

68. Drilling Machines

Cincinnati Gilbert Machine Tool Co. Horizontal boring, drilling and milling machine and radial drilling machines are covered in 8-page illustrated catalog 1152. Condensed specifications are included for the table and floor type boring mills and accessories.

69. Boiler Control

Continental Foundry & Machine Co., Copes-Vulcan Div. Included in Copes-Vulcan boiler control described in 10-page bulletin 1007 are combustion, feed water, boiler steam temperature and soot blower controls. Instrumentation, either standard or miniature is by Taylor.

70. Wire Thread Inserts

Heli-Coil Corp. The use of stainless steel wire thread inserts in both production and maintenance fields is discussed in 8-page illustrated bulletin No. 660. Applications are pictured, and design savings considered.

71. Fire Clays

International Minerals & Chemical Corp., Eastern Clay Products Dept. Revivo, Lawco and Bondart fire clays are subject of 6-page illustrated folder 2M-1-53-RP. A general discussion on preferred fireclay properties is given, together with other necessary selection data.

72. Plastic Pipe

Carlon Products Corp. Informative answers to the 22 most frequently asked questions about flexible and rigid pipe are presented in two illustrated leaflets. Pictures show installation. Diameters and weights for ½ to 2-in. rigid Lexpipe are listed, as are working pressures for ½ to 6-in. flexible pipe.

73. Disk Brakes

Goodyear Tire & Rubber Co., Industrial Brake Dept., Aviation Products Div. 8-page illustrated brochure titled, "Industrial Disc Brakes by Goodyear" deals with development and application of various types. Pictured applications include use on rewind machines, various transmissions, high speed band saws and mine loading machines. Brakes are operated by any standard hydraulic or mechanical means, and range in diameter from 8 to 72 in.

74. Forced Air Heaters

Dravo Corp. How Counterflo heaters provide five functions of comfort heating, year-round ventilating, tempering make-up air, process drying, and heat curing, is told in 12-page bulletin 523-B. Design and operational advantages are pointed out, and heaters' flexibility of application shown. Models range in output capacities from 400,000 to 2,000,000 Btu per hour.

75. Gas Mixers

Hauck Mfg. Co. Air-gas proportional mixers are subject of 12-page illustrated catalog 805A. Single manual or automatic unit controls and accurately proportions mixture over its complete capacity range. Capacity tables are given for five different gases and for eight air pressure ratings.

76. Electric Fuses

General Electric Co., Construction Materials Div. Renewable time delay, one-time, plug and copper link fuses and fuse holders are covered in 24-page illustrated catalog. Technical section covers how a fuse operates, maintenance hints, dimensions and excerpts from 1951 National Electrical Code pertaining to fuses.

77. Conveyor Furnaces

Flinn & Dreffein Engineering Co. This company specializes in the design, manufacture and installation of industrial furnaces to meet any requirement. Four-page illustrated bulletin pictures various units typical of the line built, which includes gas, fuel oil and electrically fired conveyorized and car type models.

10-5 53

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78. Fluid Line Fittings

Chicago Forging & Mfg. Co. Seal-aste all purpose fittings for metal [illegible] in all fuel, oil, water, refrigerant, hydraulic air and injection lines are described with tabulated dimensions in 12 page booklet. Fittings are [illegible] absorbing and vibration and fatigue-proof.

79. Power Triode

Federal Telephone & Radio Corp. [illegible] illustrate and describe model R-892-R power triode for use in a radio-frequency power amplifier, oscillator or Class B modulator. Complete engineering information is furnished on unit, with plate diagrams, circuit layouts and ratings.

80. Pneumatic Tube Systems

Lanson Corp. 48 pages of booklet "On Target" picture and describe many uses for Airtube systems in [illegible] industry. System makes possible fast, continuous communication in [illegible] plants. Information on [illegible] types and dimensions, as well as on basic operation is given. Case histories are included.

81. Pillow Blocks

Dodge Mfg. Corp. Cut-away view of the Dodge-Timken pillow block plus three pages of related technical information in 8 page bulletin A-620 serve to describe this item and will aid in selection of the right size. Last page tabulates sizes ranging from 2 15/16 through 10 in.

82. Centrifugal Blowers

Hartzell Propeller Fan Co. In 24 illustrated pages, bulletin B-10 shows a line of centrifugal blowers including belt and direct drive, pressure and utility types. Illustrations are shown of representative models, with mounting dimensions. A wide range of sizes and capacities is listed.

83. Wire Cloth

Cambridge Wire Cloth Co. 140 pages of revised catalog on wire mesh conveyor belts includes data on applications, conveyor design, belt drive mechanisms, selection of belt specification and metallurgical tubular information.

84. Lifters

Cullen-Friestedt Co. Standard and [illegible] models of C-F lifters made in wide variety of types and sizes for handling of flat stocks, coils, ingot molds, tote boxes, etc., are described and illustrated in 16-page catalog SL-28. Many applications are shown and specifications are given.

85. Rubberized Abrasives

Cratex Manufacturing Co. In the form of wheels, sticks, blocks, points and cones, rubberized abrasives for such purposes as burring, blending, lapping and polishing are presented in 8-page bulletin No. 53. Types for both manual and machine operation are shown, with a range of textures from relatively coarse to extremely fine.

86. Abrasive Disk Grinding

Gardner Machine Co. 54-page illustrated "Guidebook for Better Surface Grinding Results" presents information on abrasive fundamentals, selection of abrasive disks, disk grinding and grinding safety, grinding various materials, care of abrasive disks and information on ordering Gardner disks.

87. Surface Comparator

Kota-Meters, Inc. Point-of-production examination of surface finishes to determine surface roughness from 1 to 100 microinches can be performed by the Kota-Meter surface comparator. Portable instrument is described and illustrated in 4-page bulletin.

EDITORIAL ARTICLES

Available in Limited Quantities

88. Furnace Heat Losses

A. M. Frankau of the British Iron & Steel Research Association tells "How to Curb Heat Losses from Cooling Units" in STEEL article of this title. Heat losses occurring in open-hearth furnace chills and door frames can be curtailed by adequate protection with refractories.

89. Motors Rerated

How the recently-approved 1 to 30-hp ac motor rerating program of the NEMA will effect industry is discussed in STEEL article "Up-rated Motors Bigger Inside, Smaller Outside" by T. F. Hruby, Associate Editor. Lower handling and storage costs, more economical mounting platforms and easier installation and maintenance are in store.

90. Carbon Steel Bars

Part II of STEEL article "Guide for Selection of Carbon Steel Bars" by G. P. Wittemann, Bethlehem Steel metallurgist discusses how amount of oxygen in steel prior to or during casting will determine whether it is killed or nonkilled. Types are semi-killed, rimmed, killed and capped.

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10-5-53

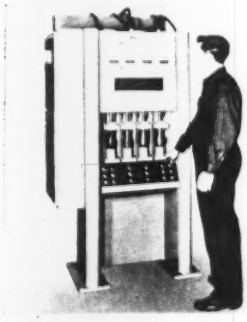
variety of punching operations in walls of various steel cylinders and drums. An extension foot-control switch can be added to permit the operator to trip the machine while handling work from the outer end. Work slips over lower die support or horn. Whitney Metal Tool Co., Dept. ST, Rockford, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 14

Pressure Testing Machines

. . . locate leaks in castings

These pressure testing machines detect and locate leaks in castings as well as brazed, welded and soldered assemblies. Machines are air



operated, electrically controlled. They subject parts to a 10-second check in which the part or a specified area in the part is charged with a given volume of air. Loss of pressure, indicating a leak or flaw, is indicated by signal lights through a sensitive measuring system. Hautau Engineering Co., Dept. ST, 721 Wanda, Ferndale 20, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 15

Featherweight Inspector

. . . checks flatness on the job

This monochromatic light generator is developed for inspection of flatness, finish and size with optical

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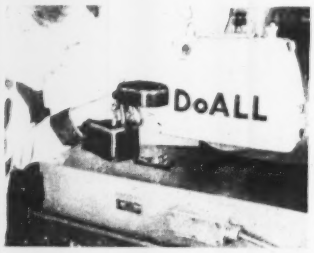
Specialists in Electronic Communication and Control

NEW PRODUCTS and equipment

flats at production machines or by roving inspectors. It permits on-the-job checks, for example, right on the chuck of a surface grinder or on the surface of laps. Adequate magnetic shielding of lightweight



aluminum permits inspection to be made on magnetic chucks when power is on.

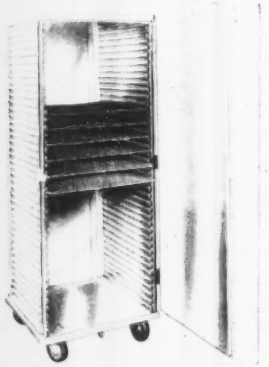
Not equipped with a stage, it is designed for use directly on the work surface of a machine tool or on a surface plate. Base is 7 inches long, 3½ inches wide. DoALL Co., Dept. ST, 254 N. Laurel Ave., Des Plaines, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 16

Parts Storage Cabinets

. . . feature flexible shelving

Line of enclosed cabinets is built for handling and storing parts that must be protected from dust, dirt and other contaminating elements. Cabinets have flexible shelving



wherein part pans or tote boxes form their own shelves when slid into grooves formed by the corrugated side walls. Corrugations are 1½-inch centers permitting location of pans so that space is used to best advantage.

To facilitate moving, cabinets are made of lightweight aluminum al-

NEW PRODUCTS and equipment

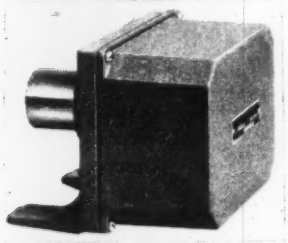
loy and mounted on rubber-tired casters. Crescent Metal Products Inc., Dept. ST, 18901 St. Clair Ave., Cleveland 10, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 17

Photoelectric Control

. . . protective-type applications

For protective-type applications such as bin or liquid level, smoke detection, etc., this high-speed photoelectric control promises wide application. Plate relay is energized when light beam is on photoelectric tube and all tubes are operating. Interruption of light beam or failure of lamp or tube



de-energizes the plate relay to open or close a circuit.

Other features include a special quick-response direct current with speeds to 1200 operations per minute, sensitivity adjustment and complete enclosure in a splash-proof aluminum case. Type F control can be supplied with either a built-in or remote photoelectric head and wide selection of light sources. Autotron Co., Dept. ST, Box 722-U, Danville, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 18

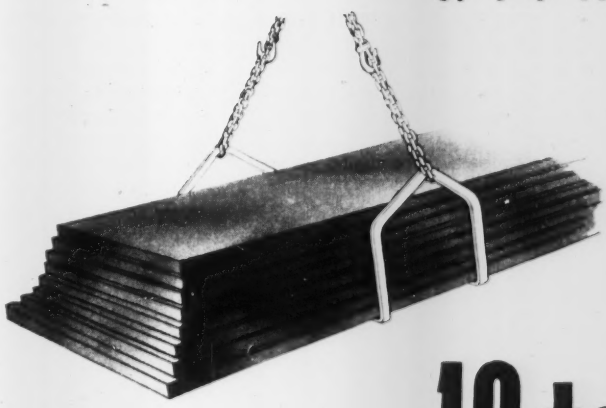
Ignitron Tubes

. . . effect cooling water savings

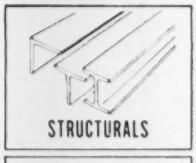
Three types of temperature-controlled ignitron tubes for welding control are capable of a reported 95 per cent saving in cooling water. In addition, the temperature-control feature protects tubes and welding transformer and electrodes against overloading and overheating. Tubes are standard mercury-pool, stainless-steel-jacketed, with addition of the temperature control device.

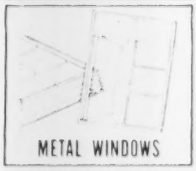
Two snap-acting switches, mounted on a constant-length reference strip, are main components

a piece of 1/4" rod



or 10 tons of 5/8" plates





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We are proud that our reputation for ON TIME SERVICE is recognized by many industrial buyers of steel. Call us the next time you need anything from screw machine stock to heavy plates.

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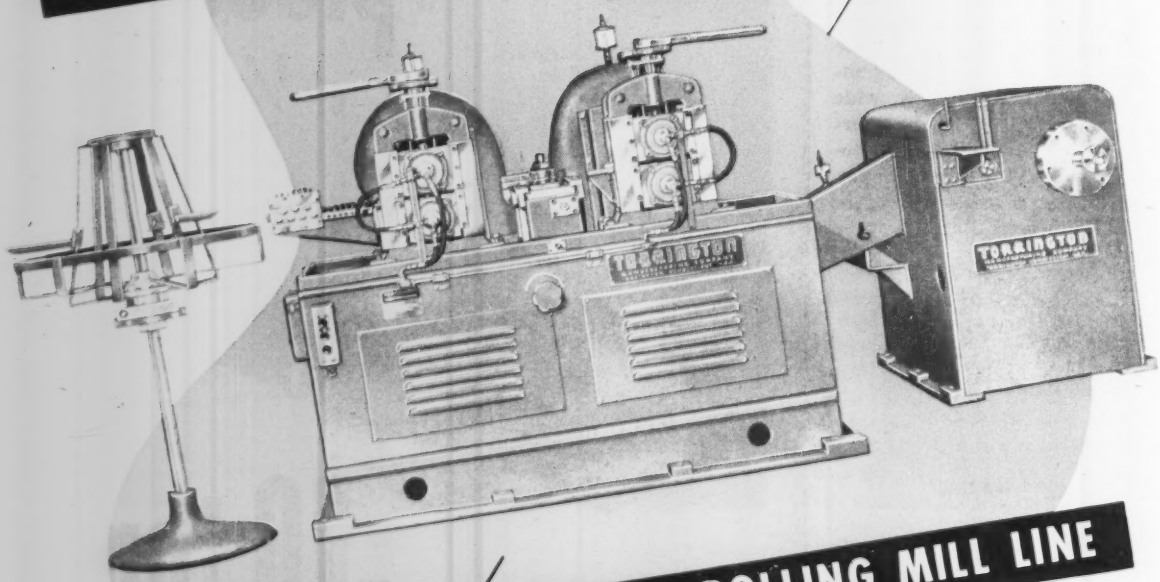


TORRINGTON'S 2-STAND FLAT WIRE ROLLING MILL LINE

SIX-STAGE LINE

1. Start with round wire in coils on pay-off 2. on thru 2-plane straightener 3. then thru first flattening rolls 4. and edging rolls 5. on to second flattening rolls 6. to winder where finished coils are formed

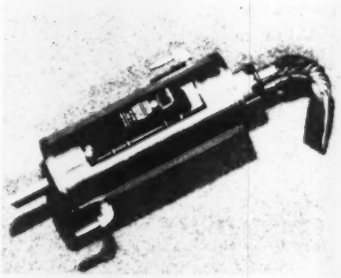
- Readily adjustable for large variety of coils and spools
- Designed for easy maintenance — rolls can be removed and replaced in minutes
- Anti-friction bearings throughout
- Internal coolant circulation in flattening rolls

THE TORRINGTON MANUFACTURING COMPANY

TORRINGTON, CONNECTICUT

Western Division: Van Nuys, California • In Canada: T. M. Co., Ltd., Oakville, Ontario

of the temperature control unit. One operates a solenoid valve in the water supply line to maintain



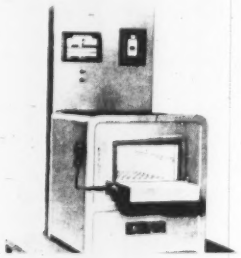
proper amount of cooling water. The other cuts off power to the tube in case of overheating or overloading. General Electric Co., Dept. ST, Schenectady, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 19

Air Draw Furnace

. . . emphasis on aluminum rivets

This recirculating air draw furnace, useful in general operations that require precise low temperature control, has particular applica-



tion in uniform heat treating of aluminum rivets.

A stainless steel retort houses the entire interior, and side wall baffles are provided. These direct air flow and support interior perforated shelves. Cooley Electric Mfg. Corp., Dept. ST, 38 S. Shelby St., Indianapolis 7, Ind.

FOR MORE DATA—CIRCLE REPLY CARD NO. 20

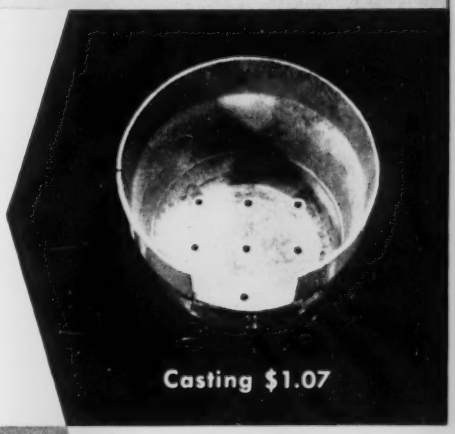
Ventilated Clutch

. . . isolated rubber-cord tube

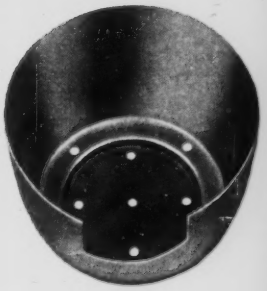
VC air-ring clutch is a completely ventilated unit of rigid type that provides for transmission of power from friction shoes through torque bars to the metal side plates of the assembly. Features include cooler operation, plus isolation of rubber-and-cord tube from heat generating

Saved: $54,000 per year...

by converting from castings



to GEOMETRIC STAMPINGS



Stamping 57c

A large New England manufacturer called in Geometric engineers to study casting components of a new home appliance product. As a result the main casting shown above was converted to a stamping. Cost of the casting was $1.07, cost of the stamping only 57c—a savings of 50c on each part—or $54,000 saved per year.

If cost reductions like this make sense to you why not call in Geometric *now*—the earlier the better. There's no obligation and you may find substantial hidden profits—by converting from castings to Geometric Stampings.

Send for free booklet on Converting from Castings to Stampings

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A Subsidiary of Barium Steel Corp.

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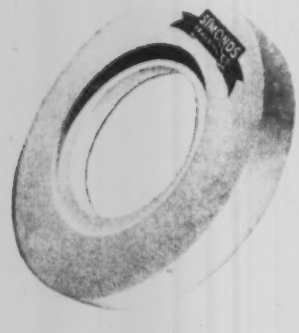

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Grinding Wheels

It's an *actual* record. The job? Grinding face and sides of chilled iron clutch sleeves. The wheel? A Simonds 24" x 2" x 12" grinding wheel . . . part of Simonds Abrasive Company's complete line of quality controlled abrasive products, including grinding wheels, mounted wheels and points, segments and abrasive grain. They're described in our free data book along with recommendations for all your jobs . . . snagging, finishing, cutting off, sharpening or polishing. For prompt supply see your Simonds distributor. He's ready to serve you, eager to aid you.

Write for free data book and name of your distributor.

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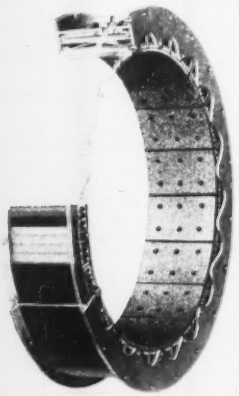
NEW PRODUCTS and equipment

friction surface. The unit has riveted, replaceable friction lining and loose, expanding tube which is replaceable without removing clutch from shaft.

Clutch is made in sizes ranging



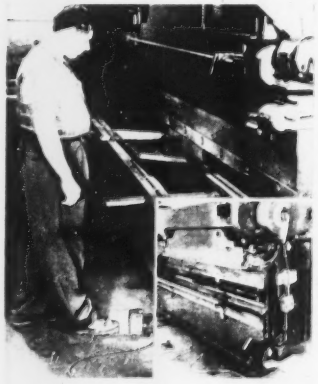
from 11½ inches through 42-inch drum diameters with torque capacities from 27,000 to 380,000 inch-pounds. Federal Fawick Corp., Dept. ST, 9919 Clinton Rd., Cleveland 11, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 21

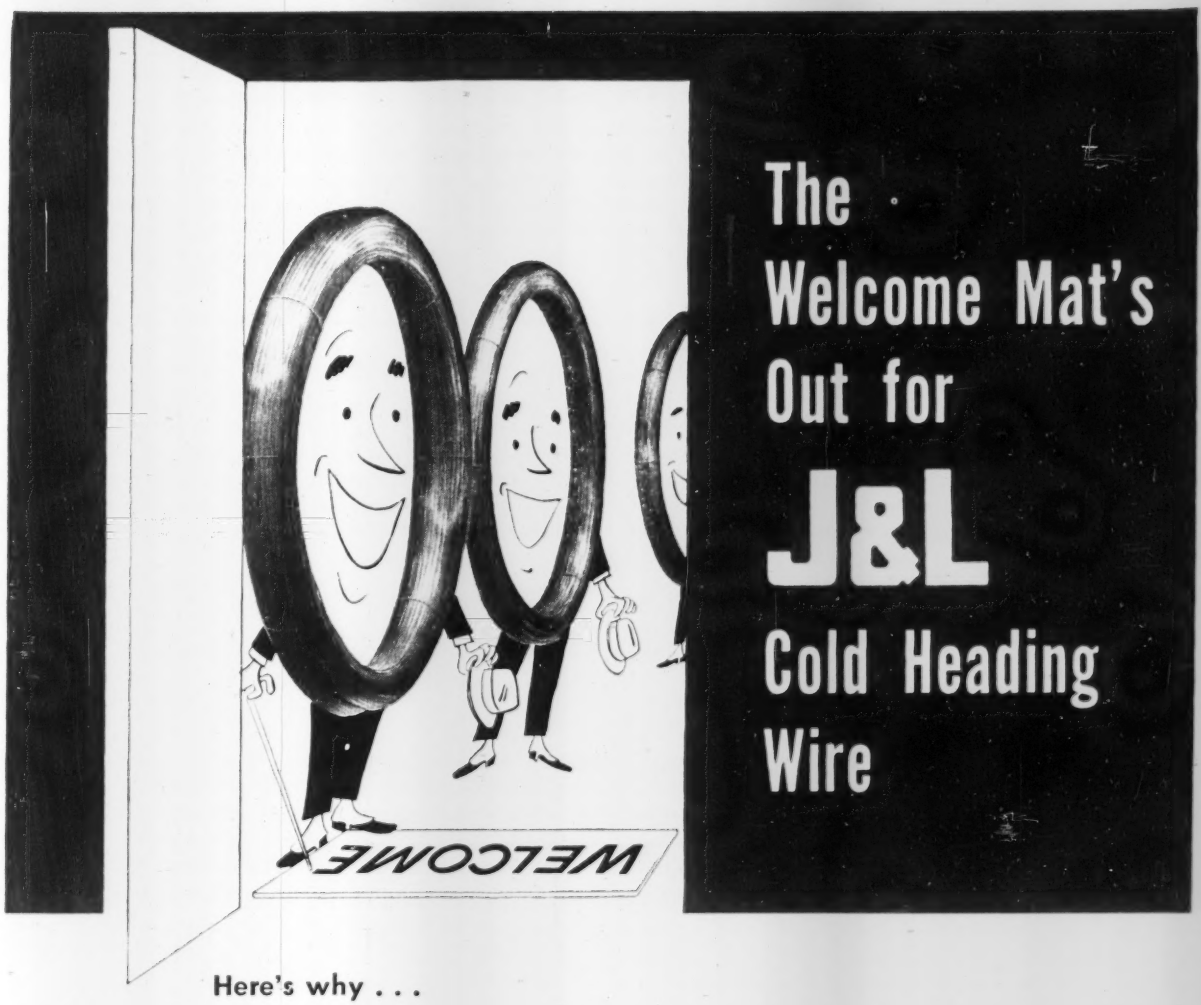
Automatic Press Brake Control

. . . no errors in judgment

This model AAC automatic press brake control is calculated to remove danger of accidents and spoiled work from press brake operation. Press brake ram can be set to stop automatically at any



point in the down stroke by knob adjustment of the predetermined stop. Complete operation is controlled by a master panel and there is no possibility of error in judgment by the operator that could lead to accidents. Because all move-



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Here's why . . .

Wire users performing a cold heading operation are constantly looking for increased production, longer die life and better finished products.

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High cold malleability
The right finish
The utmost uniformity

and J & L COLD HEADING WIRE MEETS THESE REQUIREMENTS.

Up-to-date cold headers have learned from experience that J&L steel is quality controlled from the mine to the finished product . . . assures them of wire that's chemically and physically *right* . . . that J&L has the modern equipment to produce a really uniform product of high finish. And, finally, that J&L steel-making experience provides a *dependable* source of top-flight product.

Investigate the economies of using J&L Cold Heading Wire. Contact the J & L representative nearest you or write: Wire Products Department, Jones & Laughlin Steel Corporation, 401 Liberty Avenue, Pittsburgh 30, Pa.

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JONES & LAUGHLIN STEEL CORPORATION
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Republic WIRETEX is built in 60-foot **Economy Lengths**. With WIRETEX, you save money when you buy; time and money when you use it! Get the facts today! Other Republic WIRETEX Hoses are available in all standard (3/8" to 2") sizes for handling Air, Steam, Hydraulic Fluids, Greases and other Petroleum Products.

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REPUBLIC RUBBER DIVISION

LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN 1, OHIO

INDUSTRIAL RUBBER PRODUCTS

EXTRUDED AND MOLDED PRODUCTS HOSE PACKING BELTING

ment is so controlled, there is no whipping and no work spoilage as a result of kinking.

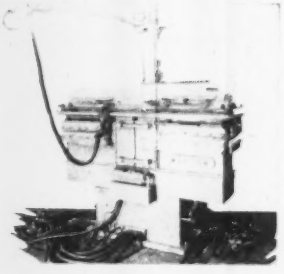
There are no large pedals or levers to manipulate, no special strength or skill required. American Actuator Corp., Dept. ST, 40 Hudson St., New York 13, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 22

Can Welding Machine

. . . has twin-station setup

This high-production capacitor can welding machine uses a twin-station setup to enable one station to be welding while the other is unloading and being loaded. Independent speed regulation at corners



insures continuous constant velocity welding over the entire butt seam of the capacitor can.

Complete automatic control of welding cycle is incorporated with rapid traverse of welding torch carriage when moving from one end to the other. Other features include use of special fluid and electrical rotary valves to allow continuous rotation of the welding torch and power ejection of the welded part. Morton Mfg. Co., Dept. ST, Broadway & Hoyt, Muskegon Heights, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 23

Weld Strength Calculator

. . . shows weld size required

This weld strength calculator is available free from the manufacturer for convenience of designers, engineers and others interested in steel plate fabrication. The calculator is a durable plastic slide rule that indicates both size or weld required for a given applied load and weight of a given length of weld in pounds.

It gives values for stresses rang-

SO SIMPLE

NO PINS • NO PIVOTS • NO BEARINGS

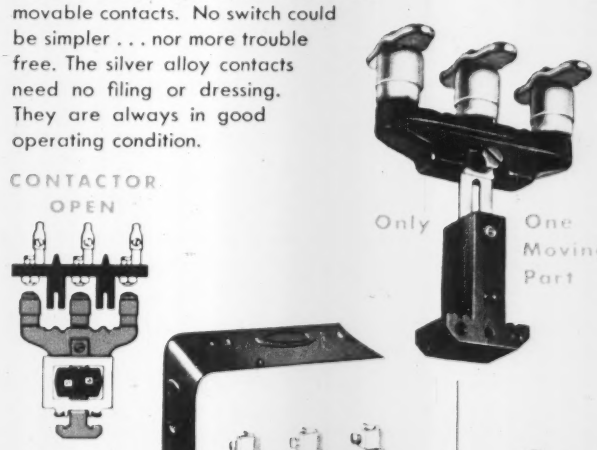
No Wonder There's No Trouble

In any device it's the moving parts that are the troublemakers. The more moving parts . . . the more chances for trouble.

Most motor starters have lots of moving parts like pins, pivots, bearings, and linkages. But . . . Allen-Bradley Bulletin 709 solenoid starters and contactors have ONLY ONE MOVING PART . . . the solenoid plunger which carries the movable contacts. No switch could be simpler . . . nor more trouble free. The silver alloy contacts need no filing or dressing. They are always in good operating condition.

The Bulletin 709 general purpose enclosures, shown below, have a bonderized, black enamel exterior finish that is corrosion resistant. The white interiors make installation and inspection easy in dark places. All switch parts have a "quality" finish. In fact, you cannot buy better "quality looking" control.

Special enclosures are available for every kind of service condition. These across-the-line starters can also be furnished in "open type," without enclosures, for mounting in machine base. Let us send you our catalog!



COMPLETE LINE

Allen-Bradley Bulletin 709 Across-the-line Starters are listed for 3-phase motors up to 600 hp, 440-550 v. All starters have accurate relays for overload protection.

Send for Illustrated Bulletin

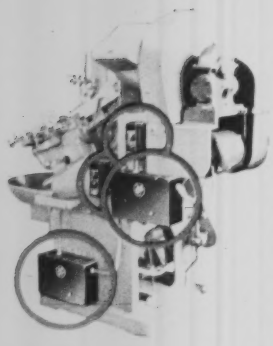
Allen-Bradley Co., 1316 S. Second St., Milwaukee 4, Wis.

ALLEN-BRADLEY

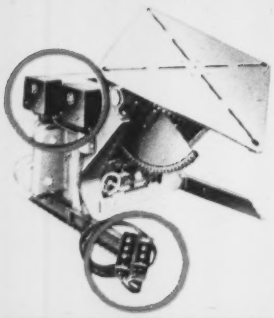
QUALITY

TROUBLE FREE MOTOR CONTROLS

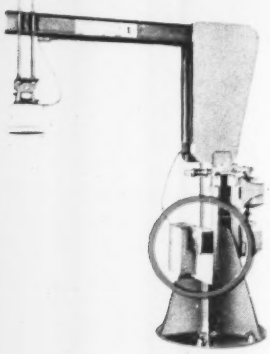
Z-53 M2



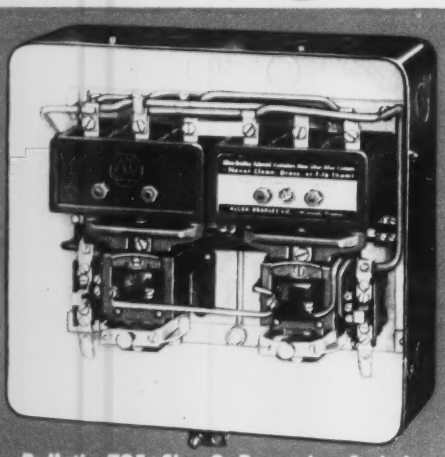
Two Allen-Bradley Bulletin 705 solenoid operated reversing switches on Waterbury-Farrel screw thread rolling machine.



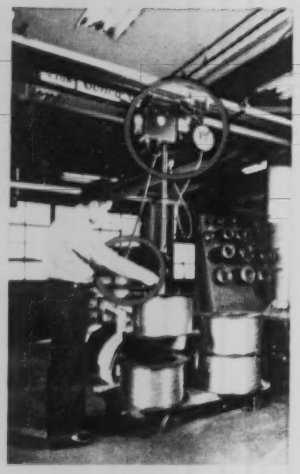
Two Allen-Bradley Bulletin 705 reversing switches on Ransome welding positioner. Push button stations are attached to flexible control cable.



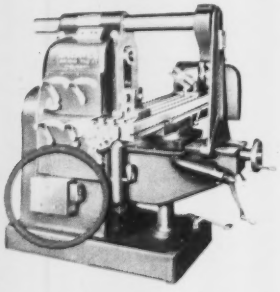
Morris-Wheeler pillar type jib crane equipped with Allen-Bradley Bulletin 705 reversing switch to control the horizontal swing of the crane.



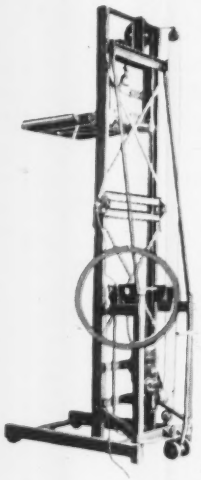
Bulletin 705, Size 2, Reversing Switch.



Bulletin 705 reversing switch on Conco ¼ ton electric hoist for lifting copper wire reels in wire mill.



Bulletin 705 reversing switch for Greaves No. 2 milling machine. Master push button station is at top of the milling machine.



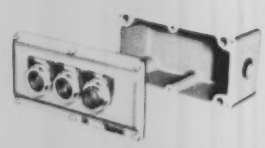
Mercer materials handling hoist equipped with Allen-Bradley Bulletin 705 reversing switch.

TROUBLE FREE REVERSING SWITCHES for 1001 APPLICATIONS

When you have an application for reversing controls, make the installation trouble free by installing Allen-Bradley Bulletin 705 reversing switches. These solenoid operated switches are mechanically and electrically interlocked for complete safety to man, motor, and machine.

Bulletin 705 reversing switches have maintenance-free silver alloy contacts. Accurate and dependable relays protect the motor against overload. Can also be furnished without overload protection. Enclosures are available for every kind of waterproof, dustproof, and explosion-proof service.

Allen-Bradley Co., 1316 S. Second St., Milwaukee 4, Wis. 7-53-R



OILTIGHT CONTROL STATIONS

Bulletin 800T oiltight push button stations for reversing control are available in many combinations of push buttons . . . normally open or normally closed . . . with or without pilot lights . . . in any horizontal or vertical arrangement.

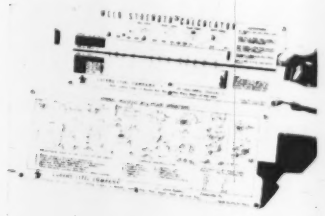
A-B Quality

ALLEN-BRADLEY

BULLETIN 705 REVERSING SWITCHES

QUALITY

ing from 2000 to 20,000 psi, and applied loads from 9000 to 450,000 pounds. On the reverse side, basic data for welded connections are



shown graphically and formulas for calculating nominal properties of welded connections are listed in convenient form. Lukens Steel Co., Dept. ST, Coatesville, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 24

Self-Molding Packing Compound

. . . copper flakes throughout

Coppersticks, a self-molding packing compound for valves, pumps and expansion joints, features dispersion of pure copper flakes throughout body of stick-shaped packing compound.

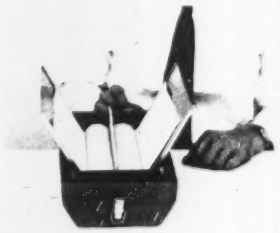
Soft, yet form-stable and dry to touch, a few sizes cover requirements for average industrial process plant. Density of compound prevents oxygen corrosion of pipe lines. Surveys Inc., Dept. ST, 219 Euclid Ave., Trenton, N. J.

FOR MORE DATA—CIRCLE REPLY CARD NO. 25

Portable Dry Processor

. . . ready copies in 20 seconds

Ready-to-use positive copies of anything that has been photo-copied can be processed in less than 20 seconds by this Constat



portable dry processor. Unit will work with any photo-copier, weighs only 8 pounds and needs no electrical or plumbing connections.

The processor measures 6 x 12 x 4 inches. F. G. Ludwig Inc., Dept. ST, Deep River, Conn.

FOR MORE DATA—CIRCLE REPLY CARD NO. 26

Clean any pipe up to 20" ID with the LAGONDA Cleaner

Lagonda motor with sleeve and universal coupling for cleaning large curved pipe. This operator is starting the cleaner down a 6-in. expansion bend.

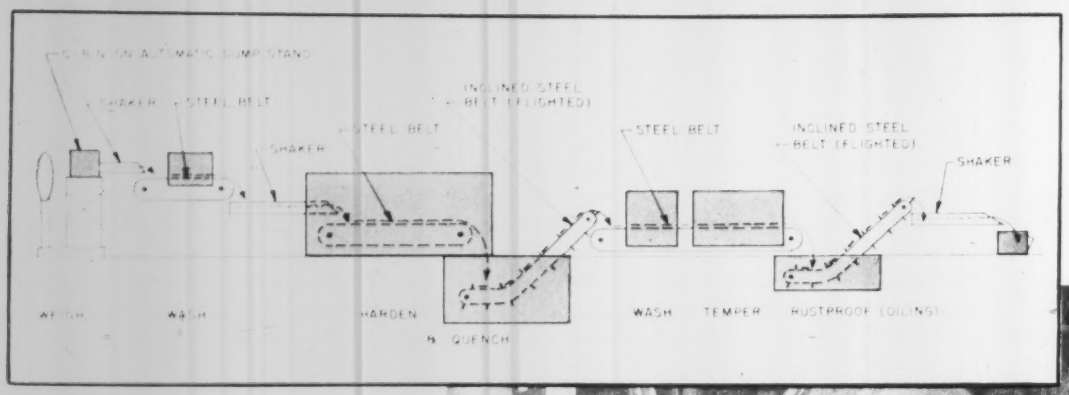
The powerful Lagonda motor driven by air or steam, whirls the almost diamond-hard cutters at a speed that makes a quick job of cleaning pipe new or old, straight or curved. The enduringly sharp cutters crack up and drive out mill scale, shear off welding beads or sputter, take out rust, and remove all sand used in pipe bending. Great for reconditioning old pipe to new condition. Motor can be equipped with sleeve to fit any pipe, and with cutter heads for any cleaning job.

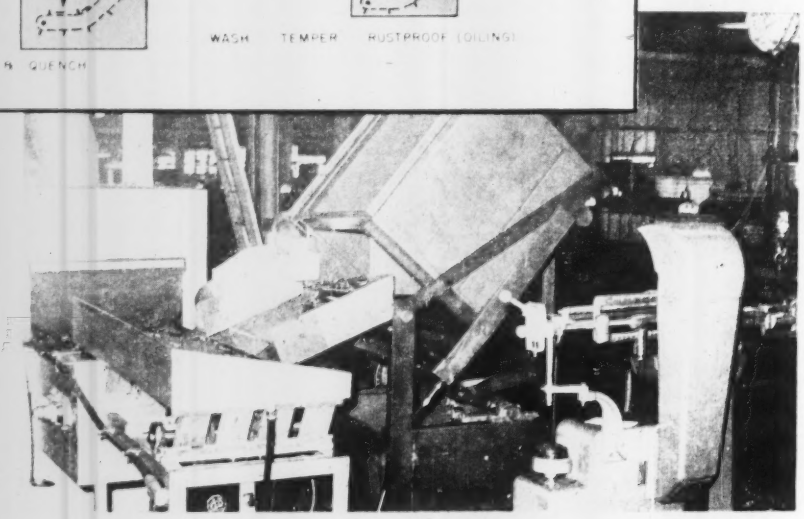
Apply our half-century of experience in your toughest pipe-conditioning job. See your local Elliott representative or write Elliott Company, Springfield, Ohio, giving details of your problem. Bulletin on request.

ELLIOTT Company

LAGONDA DIVISION

Y3.8





After C-bin load of screws is counted on scale at right, parts move on the shaker conveyor through the alkali wash. Chain hoist moves the loaded bins from the nearby storage areas

Heat Treat Line TELLS HANDLING STORY

Equipment will maintain production at rate of 1000-1400 pounds of screws per hour. From tote bin to tote bin, no human hand touches the processing

AN AUTOMATIC production line —110 feet long, yet capable of handling threaded fasteners with a jeweler's precision— is now heat treating up to 50,000 screws an hour in the hardening room of Standard Pressed Steel Co., Jenkintown, Pa.

The mechanical giant — more than one-third the length of a football field — takes Unbrako socket screws for a non-stop two-hour metallurgical ride through seven separate operations.

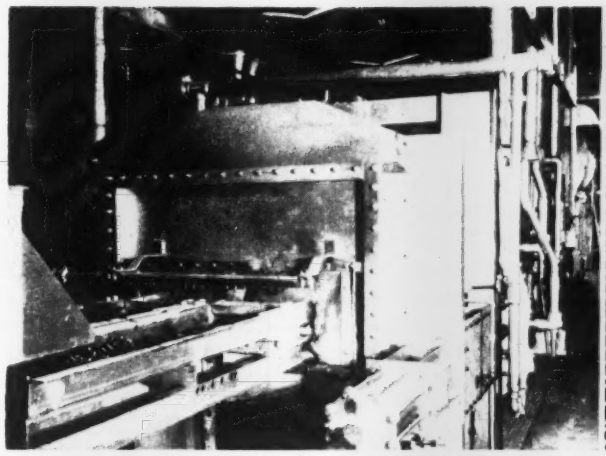
Tied Together — All operations —weighing, first wash, hardening, quench, second wash, tempering and rustproofing—are timed and tied together by a series of powered belts and shaker conveyors—so that from the time C-bin loads of screws are dropped by fork truck on the weigh scale until the screws are again returned to the C bins after rustproofing at the far end of the line, all handling is completely automatic.

Built around a 30-foot long radiant tube hardening furnace and a special gas-cracking unit that provides a precisely-controlled inert atmosphere for the heat-treating process, the entire line cost SPS close to $200,000.

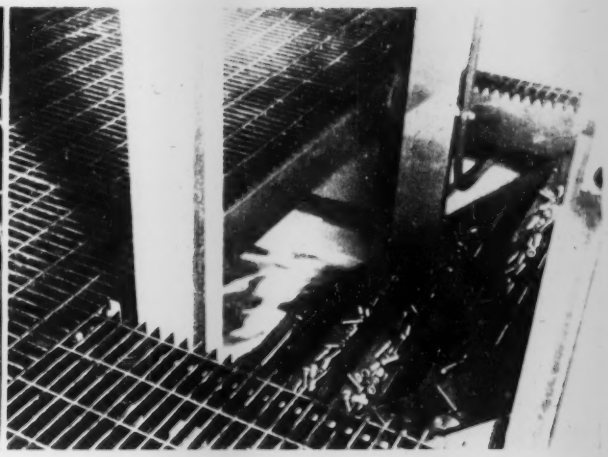
Designed and installed by Surface Combustion Corp., Philadelphia, line can heat treat more than half the plant's production of Unbrako standards and specialty aircraft fasteners. A second such line (now under consideration), would enable SPS to channel all its standard fastener production through these automatic giants.

Batch Runs, Too—Though designed primarily for large scale runs on standard items, the new equipment can economically process large or small batches of any type threaded fastener — switch from one product to another and back with minimum lost time.

In addition to the radically increased output, another big bonus of this mechanized heat treater is a two-fold precision—precision in handling and in heat-treating. Engineers of SPS and Surface Combustion carefully planned the flow of product and the sequence of



From wash, screws drop onto steel trough shaker that feeds radiant-tube hardening furnace. Thirty-foot ride inside furnace is taken on wire-mesh steel belt conveyor



After quenching, inclined belt lifts hardened screws to wire mesh belt which feeds in turn a spray wash and then the tempering oven. Temper time sets pace for the line

conveyors, shakers and gravity drops to prevent nicking of threads.

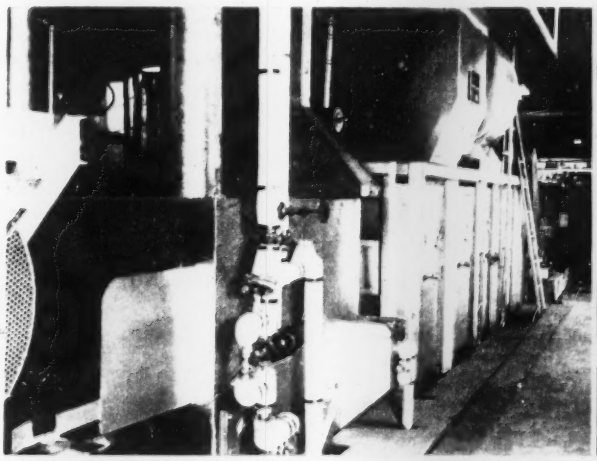
Gas Cracker—Precision in heat-treating is promoted by the auxiliary gas-cracking unit that supplies an inert atmosphere to the hardening furnace. SPS pumps propane gas into its new gas-cracker, gets out an inert gas of precisely-controlled temperature and composition. This constant atmosphere permits SPS to control with pin-point accuracy the hardness of its fasteners and the quality of the finish.

Through a few simple adjustments, the cracker can be set to supply the exact amount of carbon recovery desired. Actually, with the gas-cracker, the hardening furnace can be operated as a carburizer — adding controlled amounts of carbon to the case of the screw to build up a hard shell around a relatively mild steel.

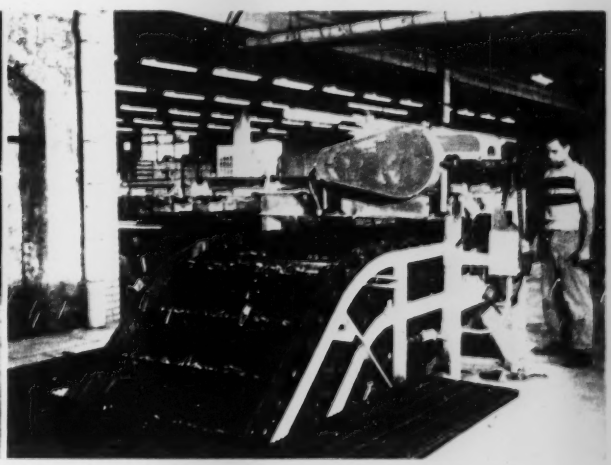
Flow Checks—Screws come to the automatic hardening line in C bins from nearby machining areas. The bins are identified and segregated in a small storage area at the beginning of the production run. They stay here till they are dispatched through the line.

Operator at the beginning of the hardening line picks up the bins by overhead chain hoist, drops them—one by one—on a counting scale. This scale is so calibrated that when the operator places fifty of a lot of screws into the balance pan, the scale dial indicates directly the number of screws in the lot.

Count is immediately sent to the shipping department so that an order for the particular lot of fasteners can be pulled and processed while the lot is being heat treated. (SPS will eventually install telescribing stations both at the weigh station and in shipping to transmit this information.) This way it is literally possible to ship a batch of screws to a customer just as soon as the lot leaves the heat-treat line. With the weighing finished, an hydraulic tilt-stand next dumps the screws directly from the weigh stand into a short section of shaker conveyor, and the process is underway.



Quenching oil is removed in spray wash at left and the screws move on to the tempering oven where the high hardness (50 Rc or more) is reduced to the desired level



At end of tempering furnace, screws drop into six-foot oil tank where they receive rustproof coating. Another inclined conveyor delivers them to vibrating shakeout

CALENDAR
OF MEETINGS

October 5-7, American Society of Mechanical Engineers: Fall meeting, Hotel Sheraton, Rochester, N. Y. Society address: 29 W. 39th St., New York 18. Secretary: C. E. Davies.

October 6-7, National Fluid Power Association: Fall meeting, Sheraton hotel, Chicago. Association address: 1618 Orrington Ave., Evanston, Ill. Executive secretary: Barrett Rogers.

October 6-8, American Institute of Electrical Engineers: Conference on application of motors to air-moving equipment and symposium on induction motors, Hotel Van Orman, Ft. Wayne, Ind. Institute address: 33 W. 39th St., New York 18. Secretary: H. H. Henline.

October 6-8, Electric League of Western Pennsylvania: Industrial electric exposition, William Penn hotel, Pittsburgh. Publicity chairman: F. B. Mahon, Duquesne Light Co., Pittsburgh.

October 7, National Association of Corrosion Engineers: Northeast regional conference, Hotel Taft, New Haven, Conn. Association address: 1061 M & M Bldg., Houston 2. Executive secretary: A. B. Campbell.

October 7-9, National Association of Corrosion Engineers: South-central regional meeting, Mayo hotel, Tulsa, Okla.

October 7-10, Pressed Metal Institute: Annual meeting, Bellevue-Stratford hotel, Philadelphia. Institute address: 2860 E. 130th St., Cleveland 20. Managing director: Orrin B. Wentz.

October 8, American Iron & Steel Institute: Chicago regional technical meeting, Palmer House, Chicago. Institute address: 350 Fifth Ave., New York 1. Secretary: George S. Rose.

October 8-9, Rail Steel Bar Association: Fall meeting, Hotel Sheraton, St. Louis. Association address: 38 S. Dearborn St., Chicago 3. Secretary: W. H. Jacobs.

October 8-9, American Society For Quality Control Inc.: Midwest conference, Masonic Temple, Davenport, Iowa. Society address: 70 E. 45th St., New York 17. Secretary: Edward B. Haden.

October 8-9, National Conference on Industrial Hydraulics: Sheraton hotel, Chicago. Conference secretary: John G. Iuba, Illinois Institute of Technology, 35 W. 33rd St., Technology Center, Chicago 16.

October 8-9, Gray Iron Founders Society Inc.: Annual meeting, Hotel Jefferson, St. Louis. Society address: 210 National City-E. 6th St. Bldg., Cleveland. Executive vice president: Donald H. Workman.

October 8-9, MTM Association for Standards & Research: Methods-time measurement conference, Hotel Statler, New York. Information: Executive secretary, MTM Association for Standards & Research, 531 E. Liberty St., Ann Arbor, Mich.

October 11-15, Chamber of Commerce of the United States: Better business relations conference, Hotel Gearhart, Gearhart, Oreg. Chamber of Commerce address: 1615 H St. NW, Washington.

October 12-13, American Coke & Coal Chemicals Institute: Annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Institute address: 711-14th St. NW, Washington 5. Executive secretary: Samuel Weiss.

October 12-14, Packaging Institute: Annual meeting, Hotel Statler, New York. Institute address: 342 Madison Ave., New York 17. Executive director: Lawrence V. Burton.

October 12-14, National Association of Sheet Metal Distributors and American Hardware Manufacturers Association: Joint convention, Marlborough-Blenheim hotel, Atlantic City. Information: Thomas A. Fernley Jr., 1900 Arch St., Philadelphia 3.

October 12-17, Concrete Reinforcing Steel Institute: Semi-annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Institute address: 38 S. Dearborn St., Chicago 3. Managing director: H. C. Delzell.

October 13, Steel Joist Institute: Semi-annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Institute address: Dupont Circle Bldg., Washington 6. Managing director: C. H. Luedeman.

October 13-15, Caster & Floor Truck Manufacturers Association: Annual meeting, Hotel Cleveland, Cleveland. Association address: 27 E. Monroe, Chicago 3. Executive secretary: Harry P. Dolan.

October 14-16, Scientific Apparatus Makers Association: Midyear meeting, recorder-control section, Seaview Country Club, Absecon, N. J. Association address: 20 N. Wacker Dr., Chicago 6. Executive vice president: Kenneth Andersen.

October 14-16, American Institute of Electrical Engineers: Conference on machine tools, Hotel Cleveland, Cleveland. Institute address: 33 W. 39th St., New York 18.

October 15-17, Foundry Equipment Manufacturers Association: Annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Association address: 1008 Engineers Bldg., Cleveland 14. Assistant treasurer: Arthur J. Tuscany Jr.

October 16, American Supply & Machinery Manufacturers' Association Inc. and National Industrial Distributors' Association: Joint regional meeting and workshop conference, Statler hotel, Washington. Information: R. Kennedy Hanson, 814 Clark Bldg., Pittsburgh 22.

October 16-18, Society of Industrial Designers: Annual design conference, Bedford Springs hotel, Bedford, Pa. Society address: 48 E. 49th St., New York 17. Executive secretary: Sally G. Swing.

October 16-18, Metal Treating Institute: Annual meeting, Hotel Carter, Cleveland. Institute address: 271 North Ave., New Rochelle, N. Y. Executive secretary: C. E. Herington.

October 17-18, American Society for Metals: Annual seminar, Hotel Statler, Cleveland. Society address: 7301 Euclid Ave., Cleveland 3. Secretary: W. H. Eisenman.

October 17-20, Conveyor Equipment Manufacturers Association: Annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Association address: 1 Thomas Circle, Washington 5.

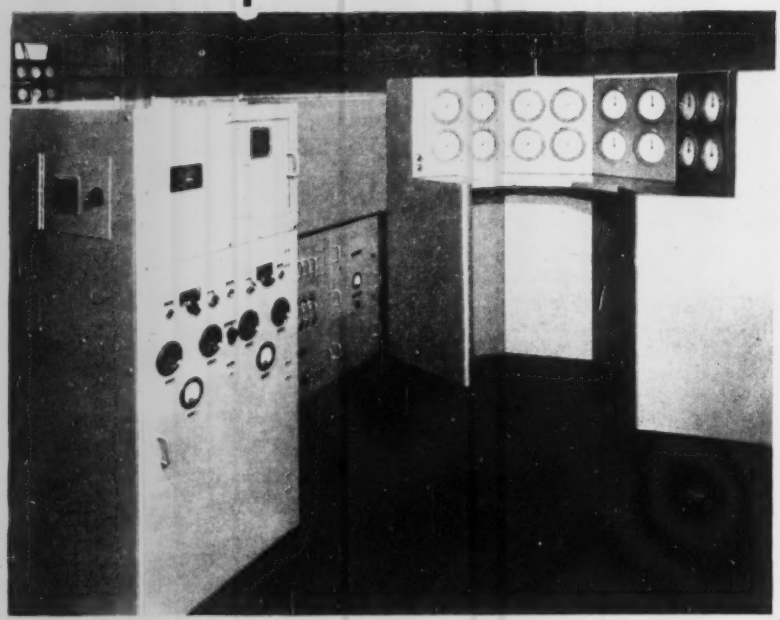
BT

"NATIONAL METAL EXPOSITION"

BOOTH 2012

CLEVELAND

OCTOBER 19-23



IN OPERATION

BAIRD ASSOCIATES-DOW Direct-Reading Spectrometer

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SURFACE FINISH STANDARDS

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the SURE way with . . . ENTHONE

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Enthone, with years of experience, has accumulated a storehouse of information on the right way to blacken metals. This knowledge is always available to our customers through our Service Department.

EBONOL "S" Processes for blackening steel to produce jet-black oxide coatings. Simple and economical to operate. Operating temperatures: EBONOL "S", 285-290°F., EBONOL "S-30", 295-305°F.

EBONOL "C" The quality black for copper and brass that meets all military specifications.

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EBONOL "Z-80" A blackening process for zinc and zinc base alloys. Operates at room temperature.

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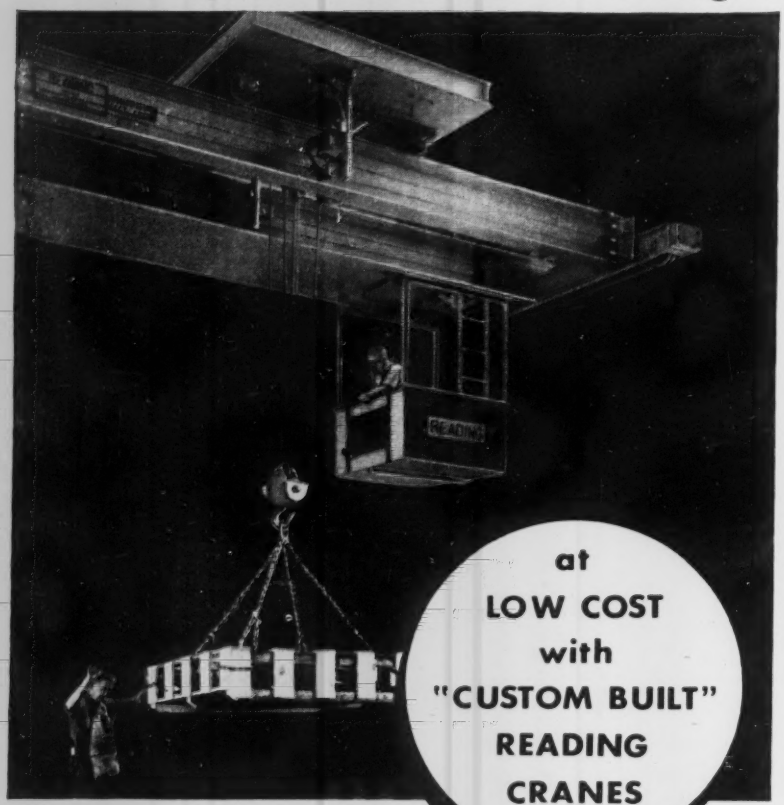
How to speed Materials Handling...



at LOW COST with "CUSTOM BUILT" READING CRANES

This crane was engineered to the needs of the job —span, lift, crane drive, trolley drive, hoisting speed from standard READING CRANE *units at no extra cost!*

• How often have you wanted a crane that would . . . cost less . . . speed materials handling . . . reduce maintenance costs . . . and meet all the requirements of your job?

When a READING CRANE is installed in your plant, you get a crane CUSTOM BUILT to fit your operations—at no added engineering cost. This unique UNIT DESIGN offers you a choice of several interchangeable motor, trolley and hoisting units. You reduce maintenance dollars because any unit can be removed for repair without dismantling other units. You buy no "extras" for special handling jobs; your READING CRANE is "tailor made" to your specifications.

For the kind of handling results you're looking for, get in touch with READING right away. At no obligation, one of our engineers will gladly analyze your operations and give you a practical, money-saving recommendation.

Reading Crane & Hoist Corporation, 2102 Adams St., Reading, Pa.

READING CRANES

CHAIN HOISTS | OVERHEAD TRAVELING CRANES | ELECTRIC HOISTS

October 18-22, Chamber of Commerce of the United States: Explaining your business seminar, Broadmoor hotel, Colorado Springs, Colo. Chamber of Commerce address: 1615 H St. NW, Washington.

October 18-22, National Screw Machine Products Association: Fall meeting, Edgewater Gulf hotel, Edgewater Park, Miss. Association address: 2860 E. 130th St., Cleveland 20. Executive secretary: Orrin B. Werntz.

October 19-21, American Standards Association: Annual meeting, Waldorf-Astoria hotel, New York. Association address: 70 E. 45th St., New York 17. Secretary: Vice Adm. G. F. Hussey Jr., USN (Ret.).

October 19-22, Society of Industrial Packaging & Materials Handling Engineers: Annual national exposition, competition and technical short course, Mechanics Bldg., Boston. Society address: 20 W. Jackson Blvd., Chicago 4. Secretary: J. W. McReynolds.

October 19-23, American Society of Civil Engineers: Annual meeting, Statler hotel, New York. Society address: 33 W. 39th St., New York 18. Executive secretary: Col. William N. Carey.

October 19-23, National Metal Congress & Exposition: Public auditorium, Cleveland. Information: W. H. Eisenman, secretary, American Society for Metals, 7301 Euclid Ave., Cleveland 3.

October 19-23, American Society for Metals: Annual meeting, Hotel Statler, Cleveland. Society address: 7301 Euclid Ave., Cleveland 3. Secretary: W. H. Eisenman.

October 19-23, American Welding Society: Annual meeting, Hotel Cleveland, Cleveland. Society address: 33 W. 39th St., New York 18. Executive secretary: J. G. Magrath.

October 19-23, American Institute of Mining & Metallurgical Engineers: Fall technical session, Hotel Allerton, Cleveland. Institute address: 29 W. 39th St., New York 18. Secretary: Edward H. Robie.

October 19-23, Society for Nondestructive Testing: Annual meeting, Hotel Hollenden, Cleveland. Society address: Box 710, Evanston, Ill. Secretary: Philip B. Johnson.

October 19-23, National Safety Council: National safety congress and exposition, Conrad Hilton, Congress, Morrison, Hamilton, La Salle and Palmer House hotels, Chicago. Council address: 425 N. Michigan Ave., Chicago 11. General secretary: R. L. Forney.

October 20, American Society of Safety Engineers: Annual meeting, Conrad Hilton hotel, Chicago. Society address: 425 N. Michigan Ave., Chicago 11. Secretary: J. B. Johnson.

October 21-22, Steel Shipping Container Institute Inc.: Fall meeting, Hotels Pierre and Hampshire House, New York. Institute address: 600 Fifth Ave., New York 20. Secretary: L. B. Miller.

October 21-23, Grinding Wheel Institute and Abrasive Grain Association: Combined fall meeting, Statler hotel, Buffalo. Information: Hunter-Thomas Associates, 2130 Keith Bldg., Cleveland.

October 22, National Industrial Conference Board Inc.: Meeting of board members and special conference on guaranteed wages and employment, Hotel Waldorf-Astoria, New York. Board address: 247 Park Ave., New York 17. Secretary: Herbert S. Briggs.

October 22-24, American Ceramic Society: Pacific Coast regional meeting, Palace hotel, San Francisco. Society address: 2525 N. High St., Columbus 2, O. Secretary: Charles S. Pearce.

October 22-25, National Tool & Die Manufacturers Association: Annual meeting, Berkeley-Carteret hotel, Asbury Park, N. J. Association address: 907 Public Square Bldg., Cleveland. Executive secretary: George S. Eaton.

October 23-24, National Noise Abatement Symposium: Armour Research Foundation of Illinois Institute of Technology, Chicago. Program chairman: George L. Bonvallet, Armour Research Foundation of Illinois Institute of Technology, 35 W. 33rd St., Technology Center, Chicago 16.

October 25-28, American Gear Manufacturers Association: Semi-annual meeting, Edgewater Beach hotel, Chicago. Association address: 302 Empire Bldg., Pittsburgh 22. Executive secretary: John C. Sears.

BAY STATE

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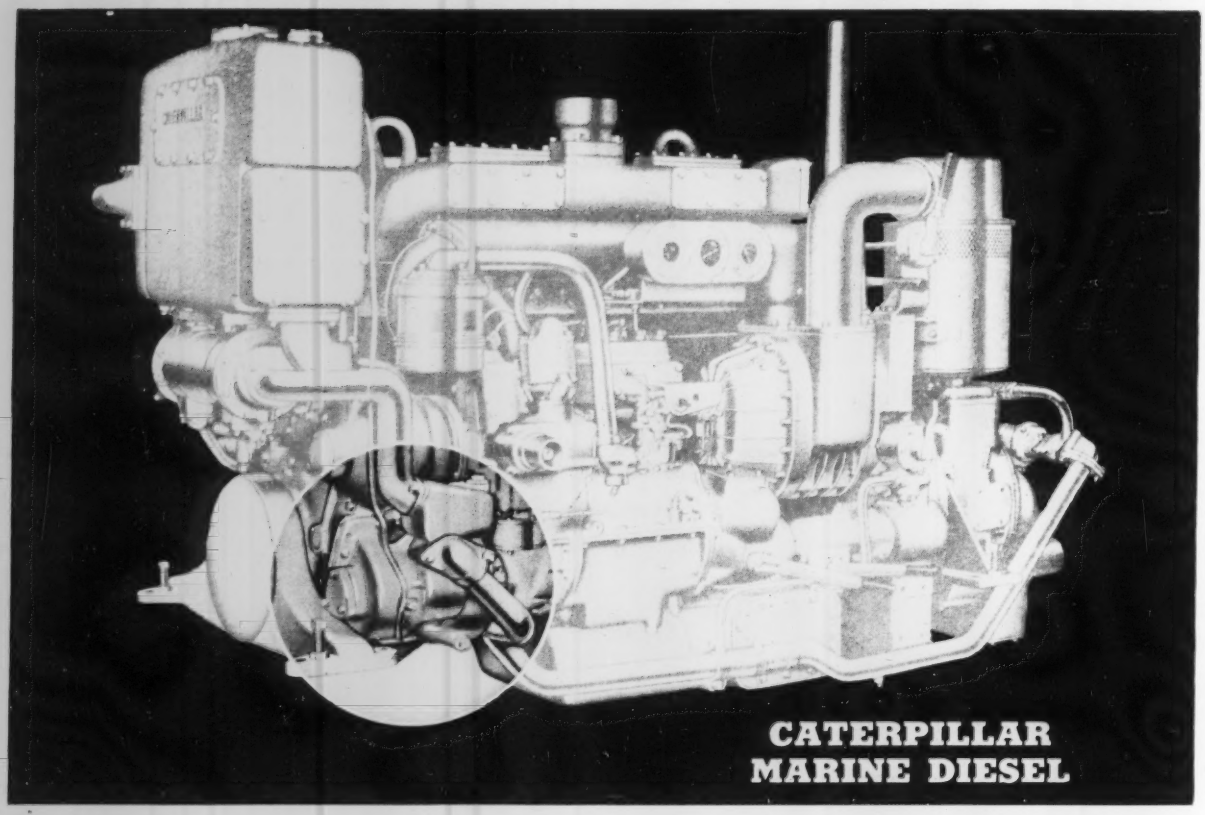

National Bearing Castings Help Cool "Cat" Engines

National Bearing Division's foundry skill permitted a new design in pump efficiency and compactness.

This extremely compact 170 horsepower Marine Diesel Engine, with special coolant pump, is a new design in efficiency by Caterpillar Tractor Co., Peoria, Illinois, makers of famous "Caterpillar" Diesel Engines, Tractors, Motor Graders, and Earthmoving Equipment.

Unusual size restrictions were specified in the coolant pump housing. It had to be of tough, durable bronze, highly resistant to corrosion by raw sea water, and painstakingly cast as the housing component for a very compact coolant pump, capable of delivering 100 gallons per minute. The housing casting design was unusually intricate, with wall thicknesses exactly $\frac{1}{4}$" in some areas, $\frac{3}{32}$" in others. The mold for each casting required *14 cores*—all perfectly positioned, as the slightest misalignment would be ruinous. And, housings had to be cast to minimize machining.

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Brake Shoe

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STEEL
October 5, 1953

Market Outlook

THIS fourth quarter, long billed as one for a slowdown in the steel business, may not hold as much gloom as some people expected.

In the week that ushered in the quarter, steel production was higher than it had been since the first week in September, the rate for the week ended Oct. 3 being 95 per cent, up 0.5 point over the preceding week.

EXPANDING— The rate would have been higher had the production of one of the principal producers—Inland Steel Co.—not been interrupted by an expansion project at Indiana Harbor, Ind. That company's operations will be at a reduced pace for a month while a new and larger blooming mill is installed.

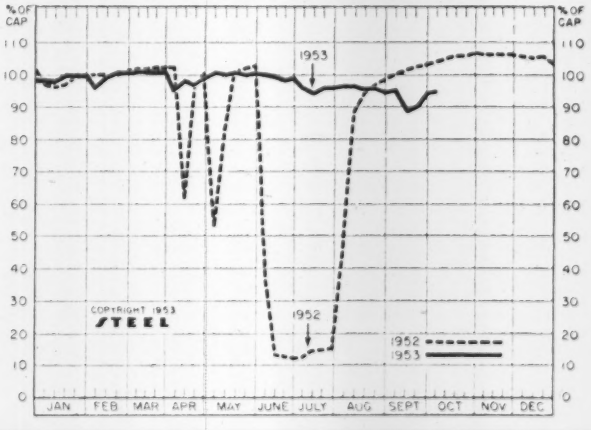
WHAT'S IDLE— Of facilities now idle, a substantial part are those that had been used to produce steel "at any cost" during the period of frenzied demand. For instance, in the Canton and Massillon, O., district, Republic Steel Corp. has some electric steelmaking furnaces that were installed to supply the heavy needs of alloy steel during World War II. Since then the need for alloy steel has not been as great, even during the Korean war. Republic made the capacity of those furnaces available to consumers who wanted conversion steel—a costly product—to piece out their steel supplies.

SLOWDOWN— Now, no one wants to pay more than the regular market price for steel. Because of this, and the reduced demand for alloy steel, Republic last week was operating only five of its 17 electric furnaces at Canton. On the other hand, Republic's facilities that produce carbon steel for sale at the regular market price, and they constitute the bulk of Republic's facilities, are operating at capacity or above. Regular price mills, like Republic, located nearest big consumption areas are well booked up for the fourth quarter on most products and expect no downward change for the first quarter of 1954.

ADJUSTMENT NEAR END?— One of the reasons the fourth quarter may not be as slack in the steel business as some people had expected is that part of the business adjustment that had been anticipated for that period was made in the third quarter. In adjusting to a somewhat lowered demand for goods in many lines and an increasing supply of steel, metalworking companies ceased buying more steel than they need and, in addition, started to live off their inventories so as to reduce them. This tended to further lower demand for steel.

WHAT'S DOING— The adjustment that began in the third quarter is, however, not completed: Another company lowered premium prices on pig iron to meet competition, and a few blast furnaces are idle because of lack of demand for pig iron. Steel mills and foundries are still shying away from scrap, with a result that what few purchases have been made have knocked prices even lower than they were. Steel companies are stepping up sales efforts on some products. Where necessary to get business they will absorb freight charges on steel deliveries. Notice of that was given last week when U. S. Steel Corp. announced it would absorb freight "when necessary and commercially desirable in order to participate in the business of an individual customer." That statement sets a pattern for the whole steel industry.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged at leading production points)

	Week Ended Oct. 3	Change	Same 1952	Week 1951
Pittsburgh	97	— 0.5*	104	99.5
Chicago	97.5	— 2.5*	107.5	107.5
Mid-Atlantic	97	+ 1	98	100
Youngstown	105	+ 1	106	94
Wheeling	97.5	0	97.5	96.5
Cleveland	100.5	0*	105.5	102
Buffalo	106.5	0	106	104
Birmingham	96.5	0	101	104
New England	82	— 3	87	90
Cincinnati	85	+ 6.5	90	100
St. Louis	96	+ 7	108	88.5
Detroit	101.5	— 0.5	108	103.5
Western	103	0	102.5	103
Estimated National Rate	95	+ 0.5	103.5	101

*Change from preceding week's revised rate.

Weekly steelmaking capacity is estimated at 2,254,459 net tons in 1953; 2,077,040 tons in 1952; 1,999,034 tons in 1951.

The Metalworking Outlook—p. 39 Technical Outlook—p. 87

PRICE INDEXES AND COMPOSITES

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics) Week Ended Sept. 29

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them write to STEEL.

Rails, standard, No. 1	$4.400	Bars, H.R., alloy	$8.675	Strip, C.R., stainless, 430 (lb)	$0.415	Tin plate, hot-dipped, 1.25 lb	$8.433
Rails, light, 40 lb	5.767	Bars, H.R. stainless, 303 (lb)	0.418	Strip, H.R., carbon	5.113	Tin plate, electrolytic, 0.25 lb	7.133
Tie Plates	5.125	Bars, H.R., carbon	4.850	Pipe, black, buttweld (100 ft)	14.454	Black plate, can making (basis)	6.238
Axles, railway	7.250	Bars, reinforcing	4.775	Pipe, galv., buttweld (100 ft)	17.731	Wire, drawn, carbon	7.713
Wheels, freight car, 33 in. (per wheel)	47.000	Bars, C.F., carbon	7.860	Pipe, line (100 ft)	141.960	Wire, drawn, stainless, 430 (lb)	0.548
Plates, carbon	4.550	Bars, C.F., alloy	11.075	Casing, oil well, carbon (100 ft)	143.519	Rail ties (bundle)	5.653
Structural Shapes	4.383	Bars, C.F., stainless, 302 (lb)	0.433	Casing, oil well, alloy (100 ft)	214.123	Nails, wire, 8d common	7.530
Bars, tool steel, carbon (lb)	0.415	Sheets, H.R., carbon	4.705	Tubes, boiler (100 ft)	‡	Wire, barbed (80-rod spool)	6.847
Bars, tool steel, alloy, oil hardening die (lb)	0.505	Sheets, C.R., carbon	5.904	Tubing, mechanical, carbon (100 ft)	‡	Woven wire fence (20-rod roll)	16.174
Bars, tool steel, H.R. alloy, high speed W 6.75, Cr 4.6, V 2.1, Mo 5.5, C 0.80 (lb)	1.135	Sheets, galvanized	6.945	Tubing, mechanical, stainless, 304 (100 ft)	161.198	‡Not available	
Bars, tool steel, H.R. alloy, high speed W18, Cr 4, V 1 (lb)	1.730	Sheets, C.R., stainless, 302 (lb)	0.548				
		Sheets, electrical	9.183				
		Strip, H.R., carbon	7.371				

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	Sept. 29 1953	Sept. 22 1953	Month Ago	Sept. Average
(1947-1949=100)	141.7	141.7	141.7	141.7

STEEL's FINISHED STEEL PRICE INDEX

	Oct. 1 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	189.38	189.38	189.38	181.31	143.08
Index in cents per lb.	5.130	5.130	5.130	4.912	3.878

STEEL's ARITHMETICAL PRICE COMPOSITE*

	Oct. 1 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Finished Steel, NT	$115.56	$115.56	$115.56	$110.98	$85.05
No. 2 Fdry. Pig Iron, GT	56.04	56.04	56.04	55.04	44.30
Basic Pig Iron, GT	56.04	56.04	56.04	54.66	43.86
Malleable Pig Iron, GT	57.27	57.27	57.27	55.77	44.68
Steelmaking Scrap, GT	31.50	36.50	46.50	43.00	43.33

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

COMPARISON OF PRICES

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	Oct. 1 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	4.15	4.15	4.15	3.95	3.45
Bars, H.R., Chicago	4.15	4.15	4.15	3.95	3.35
Bars, H.R., del. Philadelphia	5.302	5.302	5.302	4.502	3.79
Bars, C.F., Pittsburgh	5.20	5.20	5.20	4.925	3.95
Shapes, Std., Pittsburgh	4.10	4.10	4.10	3.85	3.25
Shapes, Std., Chicago	4.10	4.10	4.10	3.85	3.25
Shapes, deld., Philadelphia	4.38	4.38	4.38	4.13	3.48
Plates, Pittsburgh	4.10	4.10	4.10	3.90	3.50
Plates, Chicago	4.10	4.10	4.10	3.90	3.40
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.15	3.75
Plates, Sparrows Point, Md.	4.10	4.10	4.10	3.90	3.45
Plates, Claymont, Del.	4.55	4.55	4.55	4.35	3.95
Sheets, H.R., Pittsburgh	3.925	3.925	3.925	3.775	3.275
Sheets, H.R., Chicago	3.925	3.925	3.925	3.775	3.25
Sheets, C.R., Pittsburgh	4.775	4.775	4.775	4.575	4.00
Sheets, C.R., Chicago	4.775	4.775	4.775	4.575	4.00
Sheets, C.R., Detroit	4.975	4.975	4.975	4.775	4.20
Sheets, Galv., Pittsburgh	5.275	5.275	5.275	5.075	4.40
Strip, H.R., Pitts.	3.975-4.425	3.975-4.425	3.975-4.425	3.75-4.225	3.275
Strip, H.R., Chicago	3.925	3.925	3.925	3.725	3.275
Strip, C.R., Pittsburgh	5.45-5.95	5.45-5.95	5.45-5.95	5.10-5.80	4.00
Strip, C.R., Chicago	5.70	5.70	5.70	5.35	4.125
Strip, C.R., Detroit	5.45-6.05	5.45-6.05	5.45-6.05	5.30-6.05	4.20
Wire, Basic, Pitts.	5.475-5.525	5.475-5.525	5.475-5.525	5.10-5.225	4.15
Nails, Wire, Pittsburgh	6.35-6.55	6.35-6.55	6.35-6.55	6.20-6.35	5.15
Tin plate (1.50 lb), box, Pitts	$8.95	$8.95	$8.95	$8.95	$6.70

SEMIFINISHED STEEL					
Billets, forging, Pitts (NT)	$75.50	$75.50	$75.50	$70.50	$81.00
Wire rods, ¼-⅝", Pitts	4.525	4.525	4.525	4.325	3.40

PIG IRON, Gross Ton	Oct. 1 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bessemer, Pitts.	$57.00	$57.00	$57.00	$55.50	$47.00
Basic, Valley	56.00	56.00	56.00	54.50	43.00
Basic, deld. Phila.	60.75	60.75	60.75	59.25	46.17
No. 2 Fdry, Pitts.	56.50	56.50	56.50	55.00	46.50
No. 2 Fdry, Chicago	56.50	56.50	56.50	55.00	43.25
No. 2 Fdry, Valley	56.50	56.50	56.50	55.00	43.50
No. 2 Fdry, deld. Phila.	61.26	61.25	61.25	59.75	46.67
No. 2 Fdry, Birm.	52.88	52.88	52.88	51.38	43.38
No. 2 Fdry (Birm.) del. Cin.	60.43	60.43	60.43	58.93	49.09
Malleable, Valley	56.50	56.50	56.50	55.00	43.50
Malleable, Chicago	56.50	56.50	56.50	55.00	43.50
Ferromanganese, Duquesne	200.00†	200.00†	200.00†	228.00*	148.00*

*78-82% Mn, per gross ton, Etna, Pa. †74-76% Mn, per net ton.

SCRAP, Gross Ton (Including broker's commission)					
No. 1 Heavy Melt, Pitts.	$31.50	$29.50	$32.50	$44.00	$32.75
No. 1 Heavy Melt, E. Pa.	30.50	31.50	41.50	41.50	45.50
No. 1 Heavy Melt, Chicago	29.50	25.50	37.50	42.50	41.75
No. 1 Heavy Melt, Valley	34.50	36.50	41.50	44.00	42.75
No. 1 Heavy Melt, Cleve.	30.50	32.50	40.50	43.00	42.25
No. 1 Heavy Melt, Buffalo	35.00	39.50	41.50	43.00	46.25
Rails, Rerolling, Chicago	49.00	51.00	54.00	52.50	63.25
No. 1 Cast, Chicago	32.50	35.00	38.00	48.50	70.00

COKE, Net Ton					
Beehive, Furn, Connlsvl.	$14.75	$14.75	$14.75	$14.75	$14.25
Beehive, Fdry, Connlsvl.	16.75	16.75	16.75	17.00	17.00
Oven, Fdry, Chicago	24.50	24.50	24.50	23.00	20.40

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

PRIMARY METALS AND ALLOYS

Aluminum: 99% plus, ingots 21.50, pigs 20.00, 10,000 lbs or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 12% Si, 23.30; No. 43, 5% Si, 23.10; No. 142, 4% Cu, 24.40; No. 195, 4.5% Cu, 0.8% Si, 23.70; No. 214, 3.8% Mg, 24.40; No. 356, 7% Si, 0.3% Mg, 23.20.

Antimony: R.M.M. brand, 99.5% 34.50, Lone Star brand, 35.00 f.o.b. Laredo, Texas, in bulk. Foreign brands, 99.5%, 25.50-26.00 New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, $71.50 per lb f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $72.75 per lb of contained Be, f.o.b. Reading, Pa.

Beryllium Copper: 3.75-4.25% Be, $40.00 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. Reading, Pa, or Elmore, O.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $2.00 per lb deld.

Cobalt: 97-99%, $2.40 per lb for 550 lb keg; $2.42 per lb for 100 lb case; $2.47 per lb under 100 lb.

Columbium: Powder, $75.00 per lb, nom.

Copper: Electrolytic 29.00-30.00 deld. Conn. Valley, 29.125-30.125 deld. Midwest; Lake 30.125 deld.; Fire refined 29.75 deld.

Germanium: 99.9%, $295 per lb nom.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $165-$175 per troy oz.

Lead: Common 13.20, chemical 13.40, corroding 13.50. St. Louis, New York basis, add 0.20.

Lithium: 98% $10-$12 per lb, depending on quantity.

Magnesium: 99.8% standard ingots 27.00, 10,000 lb or more, f.o.b. Freeport, Tex. Sticks, 1.3 in. dia., 35.00, 100 to 4999 lb.

Magnesium Alloys: AZ91B 30.50; AZ91C and alloys C, H, G and E 32.50; alloy M 34.50, 10,000 lb or more.

DAILY NONFERROUS PRICE RECORD

	Price Oct. 1	Last Change	Previous Price	Sept. Avg.	Aug. Avg.	Oct. 1952 Avg.
Copper	29.00-30.00	Aug. 19	28.50-30.00	29.500	29.375	24.500
Lead	13.30	Sept. 16	13.80	13.540	13.800	14.226
Zinc	10.00	Sept. 11	10.50	10.180	11.000	13.255
Tin	84.50	Sept. 29	83.50	82.410	80.550	121.500
Nickel	60.00	Jan. 14	56.50	60.000	60.000	56.500
Aluminum	21.50	July 15	20.50	21.500	21.500	20.000
Magnesium	27.00	Mar. 9	24.50	27.000	27.000	24.500

Quotations in cents per pound based on: Copper, deld. Conn. Valley; Lead, common grade, deld. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, deld. New York; Nickel, electrolytic cathodes, 99.9%, base size at refinery unpacked; Aluminum, primary ingots, 99% plus, deld.; Magnesium, 99.8%, Freeport, Tex.

Mercury: Open market, spot, New York, $184-$186 per 76-lb flask.

Molybdenum: Powder, 99% hydrogen reduced $3.40 per lb; pressed ingot $4.06 per lb; sintered ingot $5.53 per lb.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 60.00; 25-lb pigs 62.65; "XX" nickel shot 63.65; "F" nickel shot or ingots, for addition to cast iron 60.00; prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 0.92.

Osmium: $140-$150 per troy oz. nom.

Palladium: $23-$24 per troy oz.

Platinum: $91-$93 per troy oz. from refineries.

Radium: $16.00-$21.50 per mg. radium content, depending on quantity.

Rhodium: $125 per troy oz.

Ruthenium: $80-$85 per troy oz.

Selenium: 99.5%, $4.25-$4.75 per lb.

Sodium: 18.50, carlots; 17.00 l.c.l.

Tantalum: Sheet, rod $42.45 per lb; powder $33.50 per lb.

Tellurium: $1.75 per lb.

Thallium: $12.50 per lb.

Tin: Straits, New York, 84.50.

Tungsten: Powder, 98-99% carbon reduced, 1000 lb lots $5.35 per lb f.o.b. shipping point; less than 1000 lb $5.50; 96-97% hydrogen reduced, $6.30. Treated ingots $10.43.

Zinc: Prime western 10.00, brass special 10.25, intermediate 10.50, E. St. Louis, freight allowed over 0.50 per pound. High grade 11.35, special high grade 11.50, die casting alloy ingot 14.50, deld.

Zirconium: Sponge $14.00 per lb; powder 100 lb or more $7.00; less than 100 lb $8.00.

(Note: Chromium, manganese and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston Alloys 21.00-21.50; No. 12 foundry alloy (No. 2 grade) 20.50-21.50; 5% silicon alloy, 0.60 Cu max., 22.75-23.25; 13 alloy, 0.60 Cu max., 22.75-23.25; 195 alloy 21.50-22.50; 108 alloy 21.00-21.50; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 21.00-22.50; grade 2, 19.50-21.00; grade 3, 18.50-20.00; grade 4, 18.00-19.00.

Brass Ingot: Red brass, No. 115, 24.50; tin bronze, No. 225, 35.25; No. 245, 29.50; high-leaded tin bronze, No. 305, 28.75; No. 1 yellow, No. 405, 20.75; manganese bronze No. 421, 25.25.

Magnesium Alloy Ingot: AZ63A, 31.50; AZ91B, 31.50; AZ91C, 32.00; AZ92A, 31.50.

NONFERROUS MILL PRODUCTS

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 35.36; 30,000 lb lots, 35.48; l.c.l. 35.98. Weatherproof, 100,000 lb, 36.28; 30,000 lb, 36.53; l.c.l. 37.03. Magnet wire deld., 15,000 lb or more 41.83; l.c.l., 42.58.

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more $18.50 per cwt; pipe, full coils $18.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forging billets, $6; hot-rolled and forged bars, $6.

ZINC

Sheets 23.00, f.o.b. mill, 36,000 lb and over. Ribbon zinc in coils, 19.50-20.50, f.o.b. mill, 30,000 lb and over. Plates 19.50-22.25.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheet, C.R. ..	86.5	67.5	92.5
Strip, C.R. ...	92.5	70.5	98.5
Plate, H.R. ..	84.5	66.5	90.5
Rod, Shapes ..	82.5	65.5	88.5
Seamless Tubes	115.5	100.5	137.5
Shot, Blocks..		60.0	....

ALUMINUM

(30,000 lb Base, freight allowed on 500 lb or more.)

Sheets and Circles: 2S and 3S mill finish c.l.c.

Thickness Range Inches	Widths or Diameters, In., Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	33.9	...	...
0.135-0.096	12-48	34.4	...	...
0.035-0.077	12-48	35.1	32.7	37.5
0.076-0.061	12-48	35.7	32.9	37.7
0.060-0.048	12-48	36.1	33.2	38.1
0.047-0.038	12-48	36.6	33.6	38.4
0.037-0.030	12-48	37.0	34.0	39.1
0.029-0.024	12-48	37.6	34.3	39.6
0.023-0.019	12-36	38.3	35.1	40.4
0.018-0.017	12-36	39.1	35.7	41.3
0.016-0.015	12-36	40.0	36.5	42.5
0.014	12-24	41.0	37.5	43.8
0.013-0.012	12-24	42.1	38.2	44.8
0.011	12-24	43.1	39.4	46.4
0.010-0.0095	12-24	44.3	40.5	48.0
0.009-0.0085	12-24	45.6	41.9	50.0
0.008-0.0075	12-24	47.1	43.1	51.8
0.007	12-18	48.6	44.6	54.1
0.006	12-18	50.2	46.0	59.1

* Lengths 72 to 180 inches. † Maximum diameter, 28 inches.

ALUMINUM

Plates and Circles: Thickness 0.250-3 in., widths or diameters 24-60 in., lengths 72-240 in.

Alloy	Plate Base	Circle Base
2S-F, 3S-F	32.4	36.3
50S-F	33.5	37.4
4S-F	34.5	39.1
52S-F	36.2	40.9
61S-T6	37.4	41.5
24S-T4*	39.3	45.4
75S-T6*	47.1	53.7

* Widths or diameters 24-48 in., lengths 72-180 in.

ALUMINUM

Screw Machine Stock: 5000 lb and over.

Dia. (In.) or distance across flats	Round 11S-T3	Round 17S-T4	Hexagonal 11S-T3	Hexagonal 17S-T4
Drawn				
0.125	59.6	57.9	...	...
0.156-0.172	50.6	48.9	...	...
0.188	50.6	48.9	...	62.4
0.219-0.234	47.9	46.2	...	...
0.250-0.281	47.9	46.2	...	59.5
0.313	47.9	46.2	...	56.8
Cold finished				
0.375-0.531	46.6	44.9	56.2	53.4
0.563-0.688	46.6	44.9	53.4	50.2
0.750-1.000	45.5	43.8	48.9	47.8
1.063	45.5	43.8	...	45.7
1.125-1.500	43.8	42.1	47.8	45.7
Rolled				
1.563	42.7	41.0	...	...
1.625-2.000	42.1	40.4	...	44.1
2.125-2.500	41.1	39.4	...	...
2.750-3.375	39.9	38.2	...	...

ALUMINUM

Forging Stock: Round, Class 1, 42.05-32.76, in specific lengths 36-144 in., diameters 0.375-8 in.; rectangles and squares, Class 1, 49.2 to 37.6 in. random lengths 0.375-4 in. thick, widths 0.750-10 in.

Industrial Roofing Sheet (0.032-in. thick): Flat, 42.75 in. wide, lengths 60-144 in., $2.838 to $6.816 per sheet. Corrugated, 35 in. wide, lengths 60-144 in., $2.862 to $6.874 per sheet.

MAGNESIUM

Sheet: AZ31, commercial grade, 0.032-in. 108.00; 0.064-in. 81.00, 0.125-in. 71.00, 30,000 lb and over, f.o.b. mill.

Plate: Hot-rolled, AZ31, 53.00, 20,000 lb or more, 0.188-1 in. thick, widths to 48 in., lengths to 144 in.; raised pattern floor plate, 69.00, 20,000 lb or more, ¼-in. thick, widths 24-48 in., lengths 60-144 in.

Extrusion Stock: AZ31, Rectangles, ¼ x 2 in. 69.20; 1 x 4 in. 63.00. Rod, 1 in. 66.00, 2 in. 62.50. Tubing, 1 in. OD x 0.065-in. 87.00. Angles, 1 x 1 x ⅛-in. 72.90, 2 x 2 x ⅛-in. 67.00. Channels, 5 in. 67.80. I-Beams, 5 in. 66.20.

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tube	Clean Heavy	Rod Ends	Clean Turnings
Copper	48.38b	45.88c	....	48.44	26.000	28.000	25.250
Yellow Brass	41.72	41.66	42.26	44.63	19.750	19.500	18.000
Red Brass, 85%	45.44	45.38	45.98	48.25	23.000	22.750	22.250
Low Brass, 80%	44.47	44.41	45.01	47.28	22.125	21.875	21.375
Naval Brass	45.76	45.07	52.80	48.32	18.250	18.000	17.500
Commercial Bronze, 90%	46.95	46.89	47.49	49.51	23.875	23.625	23.125
Nickel Silver, 10%	55.36	59.45g	57.69	....	23.625	23.375	11.813
Phosphor Bronze, A, 5%	66.58	67.08	67.08	68.23	26.125	25.875	24.875
Silicon Bronze	52.71	51.90	52.75	70.11e	25.125	24.875	24.125
Manganese Bronze	49.48	43.62	54.06	....	18.250	18.000	17.500
Muntz Metal	43.96	39.77	....	....	18.625	18.375	17.875

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 pounds, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. g. Leaded.

NONFERROUS SCRAP

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Aluminum: 28 clipping 12.50; 1w copper clippings 9.50; mixed clippings 9.50; old sheet 8.00; borings and turnings 6.00; pistons and struts 6.00; crankcases 8.50; industrial castings 8.50.

Copper and Brass: Heavy copper and wire, No. 1 21.00; No. 2 copper 18.50-19.50; light copper 16.50; No. 1 composition red brass 13.00; No. 1 composition turnings 14.50; mixed brass turnings 9.00; new brass clippings 18.50 nom.; No. 1 brass rod turnings 13.00 nom.; light brass 9.00; heavy yellow brass 11.00; new brass rod ends 17.50 nom.; auto radiators, unsweated 11.00; cocks and faucets 13.00; brass pipe 14.50.

Lead: Heavy 9.50-10.00; battery plate 5.25-5.75; linotype and stereotype 11.75; electrotype 10.50; mixed babbitt 12.00.

Monel: Clippings 26.00-28.00; old sheet 24.00-26.00; turnings 19.00-21.00; rods 26.00-28.00.

Nickel: Sheets and clips 70.00; rolled anodes 70.00; turnings 40.00; rod ends 70.00.

Tin: No. 1 pewter 40.00-45.00, block tin pipe 50.00-55.00; No. 1 babbitt 32.00-38.00.

Zinc: old zinc, 3.50; new die cast scrap, 3.50; old die cast scrap, 3.25.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 2S, 3S clippings 14.50-15.50; 51S, 52S clippings 14.50-15.50; 14S, 17S, 24S, clippings 12.00-14.00; mixed clippings 12.50-13.00; old sheet 10.50-11.50; old cast 10.50-11.50; clean old cable, free of steel 13.50-14.50; borings and turnings 11.00-12.00.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 42.00; light scrap 37.00.

Copper, Brass: No. 1 copper 23.50; No. 2 copper 22.00; light copper 20.50; refinery brass (60% copper) per dry copper content 19.00; auto radiators 13.00 nom.

INGOT MAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper, Brass: No. 1 copper 23.00-23.50; No. 2 copper 21.50; light copper 20.00; No. 1 composition borings 18.50; No. 1 composition solids 17.25; heavy yellow brass solids 13.00; yellow brass turnings 12.25; radiators 13.00.

PLATING MATERIALS

(F.o.b. shipping points, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes $2.15 per lb.

Copper: Flat-rolled 45.04, oval 44.54, 2000-5000 lb; electrodeposited 39.78, cast 42.04, 5000-10,000 lb lots.

Nickel: Depolarized, less than 500 lb 92.00; 500-4999 lb 88.00; over 5000 lb 86.00.

Tin: Bar or slab, less than 200 lb $1.015; 200-499 lb $1; 500-999 lb 99.50; 1000 lb or more 99.

Zinc: Bar 18.50, bar or flat top 17.50, ton lots.

CHEMICALS

Cadmium Oxide: $2.15 per lb, in 100 lb drums.

Chromic Acid: Less than 2000 lb 29.00, over 2000 lb 28.75.

Copper Cyanide: Under 1000 lb 63.90, 1000 lb and over 61.90.

Copper Sulphate: 100-6000 lb 11.35; 6000-12,000 lb 11.10; 12,000-24,000 lb 10.85; 24,000-36,000 lb 10.60; 36,000 lb and over 10.35.

Nickel Chloride: 100 lb 45.00, 200 lb 43.00, 300 lb 42.00, 400-4900 lb 40.00; 5000-9900 lb 38.00; 10,000 lb and over 37.00.

Nickel Sulphate: 100 lb 37.00; 200 lb 35.00; 300 lb 34.00; 400-4900 lb 32.00; 5000-35,000 lb 30.00; 36,000 lb and over 29.00.

Silver Cyanide: Cents per ounce, 18 oz 80.625, 100 oz 78.500; 2500 oz and over 77.375.

Sodium Cyanide: Egg, under 1000 lb 19.80, 1000-19,900 lb 18.80, 20,000 lb and over 17.80, granular, add 1.0 premium to above.

Sodium Stannate: Less than 100 lb 66.20; 100-500 lb 52.10; 500-1999 lb 49.80; 2000-9999 lb 48.10; 10,000 lb or more 47.

Stannous Chloride (Anhydrous): Less than 50 lb $1.50; 50 lb $1.165; 100-300 lb $1.01; 300-999 lb 99.10; 1000-1999 lb 97; 2000-4999 lb 93.50; 5000-19,000 lb 87.20; 20,000 lb and over 81.10.

Stannous Sulphate: Less than 50 lb $1.211; 50 lb $1.10; 100-1999 lb 99.10; 2000 lb and over 87.10.

Zinc Cyanide: Under 1000 lb 54.30, 1000 lb and over 52.30.

Nonferrous Metals

Conservative buying of nonferrous metals shouldn't be frightening. With supplies improved, users see no reason to buy more than they need sooner than they need it

EASY AVAILABILITY is still the underlying reason for the conservative buying trend in nonferrous metals.

Supporting factors which accentuate but aren't the basic cause for the market slowness include a lack of zip in fabricators' orders and some sluggishness in the normal fall production upswing.

Calamity Howling—Because there's nothing lost by playing safe, buyers are taking advantage of the shorter lead times necessary. One purchasing agent explains it this way: "We're quite busy and will be in the fourth quarter despite the calamity howlers. We'll need good tonnages of metal but why should we get out on a limb and tie up our capital in heavy working stocks when we can get supplies as we need them."

A look around the market supports his contention. Only nickel is in tight supply, though not as bad as the Defense department would have you believe, say industry men. Nickel decontrol decision is still stalled in Washington's upper echelons.

Copper Crawl — Copper is less plentiful because of strikes at Kennecott properties in New Mexico and at Noranda mines in Canada. Workers at two big Anaconda mines in Chile voted to strike after wage contracts expired. Chile's president Carlos Ibanez, accusing Communist influences in spreading mine walkouts, has decreed military government in that country's copper and nitrate producing province.

U. S. copper markets still have an air of the United Nations about them as metal comes in from just about every country outside the Iron Curtain that produces the red metal. Chile remains the notable exception. Washington negotiations for purchase of 100,000 tons of Chilean copper continue at a delicate crawl.

Market Test—Aluminum is about to face its biggest market test since Korea. Producers are catching up with backlogs rapidly and deliveries are nearly current in most products. One producer is said to be sending out October sheet deliveries ahead of schedule. Customers' sales are not falling off except in appliance and building fields. Stocks are close to normal and fabricators are rebalancing and getting inventories more in line.

Fast Service—Among other metals, magnesium is readily available in nearly all alloys and forms. Tin price varies daily and threat of a New York dock strike currently lends artificial strength. Lead and zinc, needless to say, can be delivered "yesterday." Average pricing is again in vogue among buyers as present low prices still lack the strength of solid demand.

STEEL'S Metal Price Averages for Sept., 1953

(Cents per pound)

Electrolytic Copper, del. Conn.	29.500
Lead, St. Louis	13.540
Prime Western Zinc, E. St. Louis	10.180
Straits Tin, New York	82.410
Primary Aluminum Ingots, del.	21.500
Magnesium	27.000
Nickel, f.o.b. refinery	60.000

Tubing Supply Improves

Deliveries of copper tubing have narrowed considerably in a year's time. Last fall they ranged from three to four months. Today most products take two to four weeks. Specialty sizes and tempers are in best demand, but the ½ and ¾-in. sizes used in water tube and refrigerator coils are still the mainstays of the business. Home construction and refrigerator building will continue satisfactory, tube men believe, and air conditioning will be strong for years to come. Industrial work is holding up well, but sellers are cautiously eying the steel ingot rate as their sales activity in general parallels basic steel.

Distributors of copper tubing have been sitting on orders waiting for a price fall and stocks are slipping rapidly. Imports of brass tubing "at ridiculously low prices," according to one sales official, have hurt business appreciably. Discounts of 15 cents on brass tubing are common, and quality is reported good. Some copper tubing is coming in but it isn't giving nearly as much trouble as brass.

Zinc Smelter Cuts Output

Smelter production of zinc will be cut back sharply by American Zinc, Lead & Smelting Co. in the most severe industry curtailment to date. The slash of 1800 tons monthly at Fairmont, Ill., amounts to 25 per cent of the company's total smelter production. Some 400 workers will be laid off. Low prices and excessive imports were blamed for the cutback. Industry men see other smelters being forced to follow suit because of the sagging market.

In Short Supply?

Is semifabricated aluminum in short supply? On the answer to that question rests a big portion of importers' sales volume, currently running at an annual rate of $20 million, double the previous high. Under provisions of the "Buy American" act, foreign-made products can't be bought by the government unless priced substantially below their domestic equivalent. Exception is made for goods in short supply, and the Defense department is considering removal of semifabricated aluminum from that category. Ten importing companies, representing mills in Austria, Belgium, France, West Germany, Italy, Switzerland and the United Kingdom, have protested the proposed change.

Navy Copper Goes to Market

Now that a normal supply of copper is available, the Navy will once again become a market source for copper and copper-base scrap.

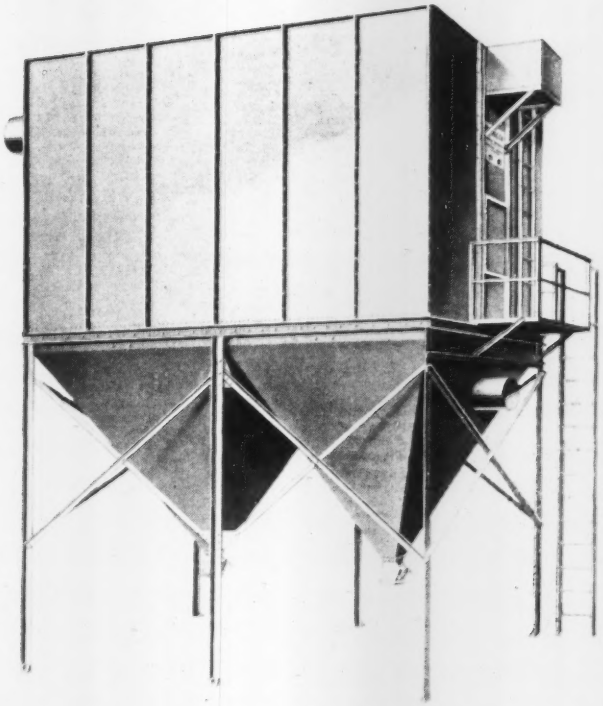
Most of its facilities have been authorized to dispose of such scrap by bid call in a departure from the method of disposal in effect since September, 1951. Since then, the Navy has made available 53,809,000 pounds of copper and copper-base scrap in refined form to defense contractors.

Nonferrous Briefs

- Mercury price is as fluid as the metal, with sharp declines in the offing, say industry men.
- Japan and Great Britain are keeping the copper scrap market tight by volume purchases.

GOLIATH LUNGS

...working for industry



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STEEL PRICES

Mill prices as reported to STEEL, cents per pound except as otherwise noted. Changes shown in italics.
Code numbers following mill points indicate producing company, key on page 147. Key to footnotes, page 149.

—SEMIFINISHED—

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 ....$86.00
Munhall,Pa. U5 ..... 59.00

INGOTS, Alloy (NT)
Detroit R7 .....$63.00
Fontana,Calif. K1 ..... 88.00
Midland,Pa. C18 ..... 62.00
Munhall,Pa. U5 ..... 62.00

BILLETS, BLOOMS & SLABS
Carbon Rerolling (NT)
Aliquippa,Pa. J5 ....$62.50
Bessemer,Pa. U5 ..... 62.00
Clairton,Pa. U5 ..... 62.00
Ensley,Ala. T2 ..... 62.00
Fairfield,Ala. T2 ..... 62.00
Fontana,Calif. K1 ..... 81.00
Gary,Ind. U5 ..... 62.00
Johnstown,Pa. B2 ..... 62.00
Lackawanna,N.Y. B2 ..... 62.00
Munhall,Pa. U5 ..... 62.00
So.Chicago,Ill. U5 ..... 62.00
So.Duquesne,Pa. U5 ..... 62.00

Carbon, Forging (NT)
Aliquippa,Pa. J5 ....$75.50
Bessemer,Pa. U5 ..... 75.50
Buffalo R2 ..... 75.50
Canton,O. R2 ..... 75.50
Clairton,Pa. U5 ..... 75.50
Cleveland R2 ..... 75.50
Conshohocken,Pa. A3 ..82.50
Detroit R7 ..... 78.50
Ensley,Ala. T2 ..... 75.50
Fairfield,Ala. T2 ..... 75.50
Fontana,Calif. K1 ..... 94.50
Gary,Ind. U5 ..... 75.50
Geneva,Utah C11 ..... 75.50
Houston S5 ..... 85.50
Johnstown,Pa. B2 ..... 75.50
Lackawanna,N.Y. B2 ..... 75.50
LosAngeles B3 ..... 94.50
Munhall,Pa. U5 ..... 75.50
Seattle B3 ..... 94.50
So.Chicago R2,U5,W14 75.50
So.Duquesne,Pa. U5 ..... 75.50
So.SanFrancisco B3 ..... 94.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 ....$82.00
Buffalo R2 ..... 82.00
Canton,O. R2 ..... 82.00
Canton,O. T7 ..... 84.60
Conshohocken,Pa. A3 ..89.00
Detroit R7 ..... 84.00
Fontana,Calif. K1 ....101.00
Gary,Ind. U5 ..... 82.00
Houston S5 ..... 92.00
Ind Harbor,Ind. Y1 ..... 82.00
Johnstown,Pa. B2 ..... 82.00
Lackawanna,N.Y. B2 ..... 82.00
LosAngeles B3 ....102.00
Massillon,O. R2 ..... 82.00
Midland,Pa. C18 ..... 82.00
Munhall,Pa. U5 ..... 82.00
So.Chicago R2,U5,W14 82.00
So.Duquesne,Pa. U5 ..... 82.00
Struthers,O. Y1 ..... 82.00
Warren,O. C17 ..... 82.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....$92.50
Canton,O. R2 ..... 92.50
Cleveland R2 ..... 92.50
Fontana,Calif. K1 ....113.50
Gary,Ind. U5 ..... 92.50
Massillon,O. R2 ..... 92.50
So.Chicago,Ill. R2 ..... 92.50
So.Duquesne,Pa. U5 ..... 92.50

SHEET BAR (NT)
Fontana,Calif. K1 ....$93.18

SKELP
Aliquippa,Pa. J5 ..... 3.85
Munhall,Pa. U5 ..... 3.75
Warren,O. R2 ..... 3.75
Youngstown R2, U5 ... 3.75

WIRE RODS
AlabamaCity,Ala. R2 ..4.525
Aliquippa,Pa. J5 ..... 4.525
Alton,Ill. L1 ..... 4.70
Buffalo W12 ..... 4.525
Cleveland A7 ..... 4.525
Donora,Pa. A7 ..... 4.525
Fairfield,Ala. T2 ..... 4.525
Fontana,Calif. K1 ....5.325
Houston S5 ..... 4.925
Johnstown,Pa. B2 ..... 4.525
Joliet,Ill. A7 ..... 4.525
KansasCity,Mo. S5 ... 4.865
LosAngeles B3 ..... 5.325
Minnequa,Colo. C10 .. 4.775
Monessen,Pa. P7 ..... 4.725
No.Tonawanda,N.Y. B11 4.525
Pittsburg,Calif. C11 .. 5.175
Portsmouth P12 ..... 4.525
Roebling,N.J. R5 ....4.625
So.Chicago,Ill. R2 ....4.525
SparrowsPoint,Md. B2 ..4.625
Sterling,Ill.(1) N15 ...4.525
Struthers,O. Y1 .....4.525
Torrance,Calif. C11 ...5.325
Worcester,Mass. A7 ...4.825

—STRUCTURALS—

Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ..4.10
Aliquippa,Pa. J5 ..... 4.10
Bessemer,Ala. T2 ..... 4.10
Bethlehem,Pa. B2 ..... 4.15
Clairton,Pa. U5 ..... 4.10
Fairfield,Ala. T2 ..... 4.10
Fontana,Calif. K1 ....4.75
Gary,Ind. U5 ..... 4.10
Geneva,Utah C11 ..... 4.10
Houston S5 ..... 4.60
Ind.Harbor,Ind. I-2 ....4.10
Johnstown,Pa. B2 ....4.15
KansasCity,Mo. S5 ....4.80
Lackawanna,N.Y. B2 ..4.15
LosAngeles B3 ..... 4.80
Minnequa,Colo. C10 ....4.55
Munhall,Pa. U5 ..... 4.10
Niles,Calif.(22) P1 ....4.91
Phoenixville,Pa. P4 ....4.95
Seattle B3 ..... 4.85
So.Chicago,Ill. U5, W14 4.10
So.SanFrancisco B3 ....4.75
Torrance,Calif. C11 ....4.80
Weirton,W.Va. W6 ....4.35

Wide Flange
Bethlehem,Pa. B2 ..... 4.15
Clairton,Pa. U5 ..... 4.10
Fontana,Calif. K1 ..... 5.30
Lackawanna,N.Y. B2 ..4.15
Munhall,Pa. U5 ..... 4.10
So.Chicago,Ill. U5 ..... 4.10

Alloy Stand. Shapes
Clairton,Pa. U5 .....5.00
Fontana,Calif. K1 ....6.40
Gary,Ind. U5 .....5.00
Munhall,Pa. U5 .....5.00
So.Chicago,Ill. U5 .....5.00

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 .....6.175
Bessemer, Ala. T2 .....6.175
Bethlehem,Pa. B2 ..... 6.20
Clairton,Pa. U5 .....6.175
Fairfield,Ala. T2 .....6.175
Fontana,Calif. K1 ....6.825
Gary,Ind. U5 .....6.175
Geneva,Utah C11 .....6.175
Ind Harbor,Ind. I-2 ..6.175
Ind Harbor,Ind. Y1 ..6.675
Johnstown,Pa. B2 ..... 6.20
Lackawanna,N.Y. B2 .... 6.20
LosAngeles B3 ..... 6.85
Munhall,Pa. U5 .....6.175
Seattle B3 ..... 6.90
So.Chicago,Ill U5, W14 6.175
So.SanFrancisco B3 .... 6.80
Struthers,O. Y1 .....6.675

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 ..... 6.20
Lackawanna,N.Y. B2 .. 6.20
Munhall,Pa. U5 .....6.125
So.Chicago,Ill. U5 .....6.125

BEARING PILES
Munhall,Pa. U5 ..... 4.10
So.Chicago,Ill. U5 ..... 4.10

—PILING—

STEEL SHEET PILING
Ind Harbor,Ind. I-2 ...4.925
Lackawanna,N.Y. B2 ..4.925
Munhall,Pa. U5 .....4.925
So.Chicago,Ill. U5 ....4.925

—PLATES—

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..4.10
Aliquippa,Pa. J5 ..... 4.10
Ashland,Ky. (15) A10 ..4.10
Bessemer,Ala. T2 ..... 4.10
Clairton,Pa. U5 ..... 4.10
Claymont,Del. C22 .....4.55
Cleveland J5, R2 ..... 4.10
Coatesville,Pa. L7 ..... 4.35
Conshohocken,Pa. A3 ..4.55
Ecorse,Mich. G5 ..... 4.65
Fairfield,Ala. T2 ..... 4.10
Fontana,Calif.(30) K1 ..4.75
Gary,Ind. U5 ..... 4.10
Geneva,Utah C11 ..... 4.10
GraniteCity,Ill. G4 .... 4.60
Harrisburg,Pa. C5 ..... 4.95
Houston S5 ..... 4.60
Ind Harbor,Ind. I-2, Y1 4.10
Johnstown,Pa. B2 ..... 4.10
Lackawanna,N.Y. B2 ..4.10
Minnequa,Colo. C10 ....4.95
Munhall,Pa. U5 ..... 4.10
Pittsburgh J5 ..... 4.10
Riverdale,Ill. A1 ..... 4.10
Seattle B3 ..... 5.00
Sharon,Pa. S3 ..... 4.10
So.Chicago,Ill. U5, W14 4.10
SparrowsPoint,Md. B2 ..4.10
Steubenville,O. W10 ...4.10
Warren,O. R2 ..... 4.10
Weirton, W.Va. W6 ....4.40
Youngstown R2, U5, Y1 4.10

PLATES, Carbon Abras. Resist
Fontana,Calif. K1 .....5.90
Geneva,Utah C11 .....5.25

PLATES, Wrought Iron
Economy,Pa. B14 .....9.30

PLATES, High-Strength Low-Alloy
Aliquippa,Pa. J5 ..... 6.25
Bessemer,Ala. T2 ..... 6.25
Clairton,Pa. U5 ..... 6.25
Cleveland J5 ..... 6.25
Conshohocken,Pa. A3 ..6.50
Ecorse,Mich. G5 ..... 7.40
Fairfield,Ala. T2 ..... 6.25
Fontana,Calif. (30) K1 .6.95
Gary, Ind. U5 ..... 6.25
Geneva,Utah C11 ..... 6.25
Ind Harbor,Ind. I-2 ..... 6.25
Ind Harbor,Ind. Y1 ....6.75
Johnstown,Pa. B2 ..... 6.25
Lackawanna,N.Y. B2 ..6.25
Munhall,Pa. U5 ..... 6.25
Pittsburgh J5 ..... 6.25
Seattle B3 ..... 7.15
Sharon,Pa. S3 ..... 6.25
So. Chicago,Ill. U5, W14 6.25
SparrowsPoint,Md. B2 ..6.25
Youngstown U5 ..... 6.25
Youngstown Y1 ..... 6.75

PLATES, Alloy
Claymont,Del. C22 ....5.65
Coatesville,Pa. L7 ....5.75
Fontana,Calif. K1 ....6.60
Gary,Ind. U5 .....5.55
Johnstown,Pa. B2 .....5.55
Munhall,Pa. U5 .....5.55
Sharon,Pa. S3 .....5.70
So.Chicago,Ill. U5, W14 5.55
SparrowsPoint,Md. B2 ..5.55

FLOOR PLATES
Cleveland J5 .....5.15
Conshohocken,Pa. A3 ..5.15
Ind. Harbor,Ind. I-2 ....5.15
Munhall,Pa. U5 .....5.15
So.Chicago,Ill. U5 .....5.15

PLATES, Ingot Iron
Ashland,c.l. (15) A10 ..4.35
Ashland,l.c.l. (15) A10..4.85
Cleveland, c.l. R2 .....4.70
Warren,O. c.l. R2 ....4.70

—BARS—

BARS, Hot-Rolled Carbon
AlabamaCity, Ala. R2 ..4.15
Aliquippa,Pa. J5 ..... 4.15
Alton,Ill. L1 ..... 4.50
Atlanta,Ga. A11 ..... 4.40
Bessemer,Ala. T2 ..... 4.15
Buffalo R2 ..... 4.15
Canton,O. R2 ..... 4.15
Clairton,Pa. U5 ..... 4.15
Cleveland R2 ..... 4.15
Detroit R7 ..... 4.30
Ecorse,Mich. G5 ..... 4.50
Emeryville,Calif. J7 ....4.90
Fairfield,Ala. T2 ..... 4.15
Fontana,Calif. K1 ..... 4.85
Gary,Ind. U5 ..... 4.15
Houston S5 ..... 4.65
Ind Harbor,Ind. I-2, Y1 4.15
Johnstown,Pa. B2 ..... 4.15
KansasCity,Mo. S5 ..... 4.85
LosAngeles B3 ..... 4.85
Milton,Pa. B6 ..... 4.15
Minnequa,Colo. C10 ....4.60
Niles,Calif. P1 ..... 4.85
N.Tonawanda,N.Y. B11 ..4.15
Pittsburg,Calif. C11 ....4.85
Pittsburgh J5 ..... 4.15
Portland,Oreg. O4 ....4.90
Seattle B3, N14 ..... 4.90
So.Chicago R2, U5, W14 4.15
So.Duquesne,Pa. U5 ....4.15
So.SanFran.,Calif. B3...4.90
Sterling,Ill.(1) N15 ....4.15
Struthers,O. Y1 ..... 4.15
Torrance,Calif. C11 ....4.85
Weirton,W.Va. W6 ....4.30
Youngstown R2, U5 ....4.15

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 ....4.875
Buffalo R2 ..... 4.875
Canton,O. T7 ..... 5.02
Canton,O. R2 ..... 4.875
Clairton,Pa. U5 ..... 4.875
Detroit R7 ..... 4.975
Ecorse,Mich. G5 ..... 5.225
Fontana,Calif. K1 ....5.925
Gary,Ind. U5 ..... 4.875
Houston S5 ..... 5.375
Ind Harbor,Ind. I-2, Y1 4.875
Johnstown,Pa. B2 ....4.875
KansasCity,Mo. S5 ....5.575
Lackawanna,N.Y. B2..4.875
LosAngeles B3 ..... 5.925
Massillon,O. R2 ..... 4.875
Midland,Pa. C18 ..... 4.875
So.Chicago R2, U5,W14 4.875
So Duquesne,Pa. U5 ..4.875
Struthers,O. Y1 ..... 4.875
Warren,O. C17 ..... 4.875
Youngstown U5 ..... 4.875

BARS & SMALL SHAPES, H.R. High-Strength Low-Alloy
Aliquippa,Pa. J5 ..... 6.225
Bessemer,Ala. T2 ..... 6.225
Bethlehem,Pa. B2 ..... 6.225
Clairton,Pa. U5 ..... 6.225
Ecorse,Mich. G5 ..... 6.875
Fairfield,Ala. T2 ..... 6.225
Fontana,Calif. K1 ..... 7.475
Gary,Ind. U5 ..... 6.225
Ind Harb.,Ind. Y1 ..... 6.725
Ind Harb., Ind. I-2 ..... 6.225
Johnstown,Pa. B2 ..... 6.225
Lackawanna,N.Y. B2 ..6.225
LosAngeles B3 ..... 6.925
Pittsburgh J5 ..... 6.225
Seattle B3 ..... 6.975
So Chicago W14 ..... 6.225
So.Duquesne,Pa. U5 ..6.225
So.SanFrancisco B3 ..6.975
Struthers,O. Y1 ..... 6.725
Youngstown U5 ..... 6.225

BAR SIZE ANGLES;H.R.CARBON
Bethlehem,Pa. B2 ..... 4.35

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 ..... 4.15
Atlanta A11 ..... 4.40
Niles,Calif. P1 ..... 4.85
SanFrancisco S7 ..... 5.10

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 ..... 5.00
Fontana,Calif. K1 ..... 6.00
Gary,Ind. U5 ..... 5.00
Houston S5 ..... 5.70
KansasCity S5 ..... 5.90
Youngstown U5 ..... 5.00

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....5.20
BeaverFalls,Pa. M12, R2 5.20
Buffalo B5 ..... 5.25
Camden,N.J. P13 .....5.65
Carnegie,Pa. C12 ..... 5.20
Chicago W18 ..... 5.20
Cleveland A7, C20 .....5.20
Detroit P17, R7 .....5.35
Detroit B5 ..... 5.40
Donora,Pa. A7 ..... 5.20
Elyria,O W8 ..... 5.20
FranklinPark,Ill. N5 ...5.20
Gary,Ind. R2 ..... 5.20
GreenBay,Wis. F7 ....5.185
Hammond,Ind. I.2, M13 5.20
Hartford,Conn. R2 .....5.75
Harvey,Ill. B5 ..... 5.20
LosAngeles R2 ..... 6.65
Mansfield,Mass. B5 .....5.75
Massillon,O. R2 ,R8 .... 5.20
Monaca,Pa. S17 ..... 5.20
Newark,N.J. W18 .....5.65
NewCastle,Pa. (17) B4..5.20
Pittsburgh J5 ..... 5.20
Plymouth,Mich. P5 .....5.45
Putnam,Conn. W18 ....5.75
Readville,Mass. C14 ....5.75
St.Louis,Mo. M5 .....5.50
So.Chicago,Ill. W14 ....5.20
SpringCity,Pa. K3 .....5.65
Struthers,O. Y1 ..... 5.20
Waukegan,Ill. A7 ..... 5.20
Worcester,Mass. V19 . 6.10
Youngstown F3, Y1 ....5.20

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland,Md. (5) C19.4.45

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 .... 6.325
BeaverFalls,Pa. M12 .. 6.325
Bethlehem,Pa. B2 ..... 6.325
Buffalo B5 ..... 6.325
Camden,N.J. P13 ..... 6.50
Canton,O. R2 ..... 6.325
Canton,O. T7 ..... 6.29
Carnegie,Pa. C12 ..... 6.00
Chicago W18 ..... 6.325
Cleveland A7, C20 .... 6.325
Detroit P7 ..... 6.425
Detroit P17 ..... 6.475
Detroit B5 ..... 6.525
Donora,Pa. A7 ..... 6.325
Elyria,O. W8 ..... 6.325
Gary,Ind. R2 ..... 6.325
Hammond,Ind. I.2, M13 6.325
Hartford,Conn. R2 .... 6.775
Harvey,Ill. B5 ..... 6.325
Lackawanna,N.Y. B2 .. 6.325
Mansfield,Mass. B5 ... 6.775
Massillon,O. R2, R8 ... 6.325
Midland,Pa. C18 ..... 6.325
Monaca,Pa. S17 ..... 6.325
Newark,N.J. W18 ..... 6.65
Plymouth,Mich. P5 .... 6.525
So.Chicago,Ill. R2, W14 6.325
SpringCity,Pa. K3 .....6.475
Struthers,O. Y1 ..... 6.325
Warren,O. C17 ..... 6.325
Waukegan,Ill. A7 ..... 6.325
Worcester,Mass. A7 ..6.625
Youngstown F3, Y1 ...6.325

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ..4.15
Atlanta A11 ..... 4.40
Buffalo R2 ..... 4.15
Cleveland R2 ..... 4.15
Emeryville,Calif. J7 ....4.90
Fairfield,Ala. T2 ..... 4.15
Fontana,Calif. K1 ..... 4.85
Gary,Ind. U5 ..... 4.15
Houston S5 ..... 4.65
Ind.Harbor,Ind. I-2, Y1 4.15
Johnstown,Pa. B2 ..... 4.15
KansasCity,Mo. S5 ..... 4.85
Lackawanna,N.Y. B2 ... 4.15
LosAngeles B3 ..... 4.85
Milton,Pa. B6 ..... 4.15
Minnequa,Colo. C10 ..... 4.75
Niles,Calif. P1 ..... 4.85
Pittsburg,Calif. C11 .... 4.85
Pittsburgh J5 ..... 4.15
SandSprings,Okla. S5 ..5.05
Seattle B3, N14 ..... 4.90
So.Chicago,Ill. R2 ..... 4.15
So.Duquesne,Pa. U5 .... 4.15
So.SanFrancisco B3 .... 4.90
SparrowsPoint,Md. B2 .. 4.15
Sterling,Ill. (1) N15 ... 4.15
Struthers,O. Y1 ..... 4.15
Torrance,Calif. C11 .... 4.85
Youngstown R2, U5 .... 4.15

BARS, Reinforcing (Fabricated; to consumers)
Johnstown, ¼-1" B2 ...5.55
KansasCity S5 ..... 6.35
LosAngeles B3 ..... 6.15
Marion,O P11 ..... 5.55
Seattle N14 ..... 5.80
Seattle B3 ..... 6.25
So.SanFrancisco B3 .... 6.25
SparrowsPt. ¼-1" B2 ...5.55
Williamsport,Pa. B19 ...5.45

RAIL STEEL BARS
Avis,Pa.(4) J8 ..... 4.75
ChicagoHts.(3) C2 .... 4.50
ChicagoHts.(4) C2 .... 4.75
ChicagoHts.(3,4) I-2 ...4.50
FortWorth,Tex.(26) T4..4.65
Franklin,Pa.(3) F5 .... 4.50
Franklin,Pa.(4) F5 .... 4.75
Marion,O (3) P11 ..... 4.50
Moline,Ill.(3) R2 ..... 4.50
Tonawanda(3,4) B12 ....5.00
Williamsport,Pa.(3) S19.5.25
Williamsport,Pa.(4) S19.5.45

BARS, Wrought Iron
Economy,Pa.(S.R.) B14.10.40
Economy,Pa.(D.R.)B14 12.90
Economy(Staybolt) B14.13.20
McK.Rks.(Staybolt) L5.15.50
McK.Rks.(S.R.) L5 ...10.40
McK.Rks.(D.R.) L5 ...14.00

—SHEETS—

SHEETS, Hot-Rolled Steel (18 gage and heavier)
AlabamaCity,Ala. R2 ..3.925
Ashland,Ky.(8) A10 ..3.925
Butler,Pa. A10 ..... 3.925
Cleveland J5, R2 ..... 3.925
Conshohocken,Pa. A3 ..4.05
Detroit M1 ..... 4.40
Ecorse,Mich. G5 ..... 4.125
Fairfield,Ala. T2 ..... 3.925
Fairless,Pa. U5 ..... 4.025
Fontana,Calif. K1 ..... 4.70
Gary,Ind. U5 ..... 3.925
Geneva,Utah C11 ..... 4.025
GraniteCity,Ill. G4 .... 4.30
Ind.Harbor,Ind. I-2, Y1.3.925
Irvin,Pa. U5 ..... 3.925
Lackawanna,N.Y. B2..3.925
Munhall,Pa. U5 ..... 3.925

Niles,O. N12 .....5.425
Pittsburg,Calif. C11 ..4.625
Pittsburgh J5 .....3.925
Riverdale,Ill A1 .....3.925
Sharon,Pa. S3 .....4.225
So.Chicago,Ill. W14 ...3.925
SparrowsPoint,Md. B2..3.925
Steubenville,O. W10 ..3.925
Torrance,Calif. C11 ..4.625
Warren,O R2 .....3.925
Weirton,W.Va. W6 ...3.925
Youngstown U5, Y1 ..3.925

SHEETS, H.R. (19 gage)

AlabamaCity,Ala. R2 ..5.225
Dover,O. R1 .....5.975
Mansfield,O. E6 .....5.80
Niles,O. N12 .....5.20
Torrance,Calif. C11 ..5.875

SHEETS, H.R. (14 ga. heavier) High-Strength Low-Alloy

Cleveland J5, R2 ....5.90
Conshohocken,Pa. A3 ..6.15
Ecorse,Mich. G5 .....6.375
Fairfield,Ala. T2 .....5.90
Fontana,Calif. K1 .....7.00
Gary,Ind. U5 .....5.90
Ind.Harbor,Ind. I-2 ...5.90
Ind.Harbor,Ind. Y1 ....6.40
Irvin,Pa. U5 .....5.90
Lackawanna(35) B2 ...5.90
Munhall,Pa. U5 .....5.90
Pittsburgh J5 .....5.90
Sharon,Pa. S3 .....5.90
So.Chicago,Ill. U5 ....5.90
SparrowsPoint(38) B2 .5.90
Warren,O. R2 .....5.90
Weirton,W.Va. W6 ....6.175
Youngstown U5 .....5.90
Youngstown Y1 .....6.40

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ..4.175
Cleveland R2 .....4.525
Ind. Harbor,Ind. I-2 ..4.175
Warren,O. R2 .....4.525

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10 .....4.775
Cleveland J5, R2 .....4.775
Ecorse,Mich. G5 .....4.775
Fairfield,Ala. T2 .....4.775
Fairless,Pa. U5 .....4.875
Follansbee,W.Va. F4 ...5.775
Fontana,Calif. K1 .....5.875
Gary,Ind. U5 .....4.775
GraniteCity,Ill. G4 ...5.275
Ind.Harbor,Ind. I-2,Y1 4.775
Irvin,Pa. U5 .....4.775
Lackawanna,N.Y. B2 ..4.775
Middletown,O. A10 ....4.775
Pittsburg,Calif. C11 ...5.725
Pittsburgh J5 .....4.775
SparrowsPoint,Md. B2..4.775
Steubenville,O. W10 ....4.775
Warren,O. R2 .....4.775
Weirton,W.Va. W6 ....4.775
Youngstown Y1 .....4.775

SHEETS, Cold-Rolled High-Strength Low-Alloy

Cleveland J5, R2 .....7.225
Ecorse,Mich. G5 .....7.675
Fontana,Calif. K1 ....8.275
Gary,Ind. U5 .....7.225
IndianaHarbor,Ind. Y1 .7.725
Irvin,Pa. U5 .....7.225
Lackawanna(37) B2 ...7.225
Pittsburgh J5 .....7.225
SparrowsPoint (38) B2.7.225
Warren,O. R2 .....7.225
Weirton,W.Va. W6 ....7.475
Youngstown Y1 .....7.725

SHEETS, Cold-Rolled Ingot Iron

Butler,Pa. A10 .....5.275
Cleveland R2 .....5.375
Middletown,O. A10 ....5.275
Warren,O. R2 .....5.375

SHEETS, Gal'd No. 10 Steel

AlabamaCity,Ala. R2 .5.275
Ashland,Ky. (8) A10 ..5.275
Canton,O. R2 .....5.275
Dover,O. R1 .....5.675
Fairfield,Ala. T2 ....5.275†
Gary,Ind. U5 .....5.275†
GraniteCity,Ill. G4 ....5.475
Ind.Harbor,Ind. I-2 ...5.325
Irvin,Pa. U5 .....5.275†
Kokomo,Ind.(13) C16..5.375
MartinsFerry,O. W10 ..5.275
Niles,O. N12 .....5.80
Pittsburg,Calif. C11 ...6.025†
Sharon,Pa. S3 .....5.45
SparrowsPoint,Md. B2 5.275
Steubenville,O. W10 ..5.275
Torrance,Calif. C11 ...6.275†
Weirton,W.Va. W6 ....5.275

†Based on 5c zinc.

SHEETS, Galvanized No. 10 High-Strength Low-Alloy

Irvin,Pa. U5 .....7.925
SparrowsPoint(39) B2 .8.075

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10 ..5.525
Canton,O. R2 .....6.025

SHEETS, Culvert

	Cu Alloy	Cu Fe
Ashland,Ky. A10	6.325	....
Canton,O. R2	...6.475	6.925
Fairfield T2	....6.075	6.325
Gary,Ind. U5	..6.075	6.325
Ind.Harbor I-2	..6.075	6.325
Irvin,Pa. U5	...6.075	6.325
Kokomo,Ind C16	6.525	....
MartinsFry.,O.W10	6.075	....
Pitts.,Cal. C11	.6.825	....
SparrowsPt. B2	6.075	....
Torrance,Calif.C11	6.825	....

SHEETS, Culvert Pure Iron

Ashland,Ky. A10 .....6.575
Fairfield,Ala. T2 .....6.325
MartinsFerry,O. W10 ..6.325

SHEETS, Galvannealed Steel

Canton,O. R2 .....5.825
Irvin,Pa. U5 .....5.825†
Kokomo,Ind (13) C16 ..5.925
Niles,O. N12 .....6.35

†Based on 5c zinc

SHEETS, ZINCGRIP Steel

Butler,Pa. A10 .....5.525
Middletown,O. A10 ....5.525

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10 .....5.775
Middletown,O. A10 ....5.775

SHEETS, Electrogalvanized

Cleveland R2 (28) 6.125
Niles,O. R2 (28) 6.125
Weirton,W.Va. W6 ....5.975

SHEETS, ALUMINIZED

Butler,Pa. A10 .....8.625

SHEETS, Enameling Iron

Ashland,Ky.(8) A10 ...5.175
Cleveland R2 .....5.175
Gary,Ind. U5 .....5.175
GraniteCity,Ill. G4 ...5.875
Ind Harbor,Ind. I-2 ...5.175
Irvin,Pa. U5 .....5.175
Middletown,O. A10 ....5.175
Youngstown Y1 .....5.175

BLUED STOCK, 29 ga.

Yorkville,O. W10 .....7.20
Follansbee,W.Va. F4 ....7.30
Follansbee (23) F4 ..7.175

SHEETS, Long Terne Steel (Commercial Quality)

BeechBott'm,W.Va.W10 5.675
Gary,Ind. U5 .....5.675
Mansfield,O. E6 .....6.25
Middletown,O. A10 ....5.675
Niles,O. N12 .....6.00
Weirton,W.Va. W6 ....5.675

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....6.075

SHEETS, Well Casing

Fontana,Calif. K1 .....6.20

—STRIP—

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2 ..3.925
Alton,Ill. L1 .....4.20
Ashland,Ky.(8) A10 ...3.925
Atlanta A11 .....4.175
Bessemer,Ala. T2 .....3.925
Bridgeport,Con.(10)S15 4.425
Buffalo (27) R2 .....3.925
Butler,Pa. (8) A10 ...3.925
Carnegie,Pa. S18 .....4.425
Conshohocken,Pa. A3 ...4.05
Detroit M1 .....4.40
Ecorse,Mich. G5 .....4.225
Fairfield,Ala. T2 .....3.925
Fontana,Calif. K1 .....4.70
Gary,Ind. U5 .....3.925
Houston,Tex. S5 .....4.425
Ind.Harbor,Ind. I-2,Y1 3.925
Johnstown,Pa.(25) B2..3.925
KansasCity,Mo.(9) S5. 4.625
Lackw'na,N.Y.(32) B2 3.925
LosAngeles(25) B3 ....4.675
Milton,Pa. B6 .....3.925
Minnequa,Colo. C10 ...5.025
NewBritain(10) S15 ...4.425
N.Tonawanda,N.Y. B11.3.925
Pittsburg,Calif. C11 ...4.675
Riverdale,Ill. A1 .....3.925
SanFrancisco S7 .....5.10
Seattle(25) B3 .....4.925
Seattle N14 .....4.925
Sharon,Pa. S3 .....4.225
So.Chicago,Ill. W14 ....3.925
So.SanFrancisco(25)B3 4.675
SparrowsPoint,Md. B2.3.925
Torrance,Calif. C11 ...4.675
Warren,O. R2 .....3.925
Weirton,W.Va. W6 ....4.025
Youngstown Y1, U5 ..3.925

STRIP, Hot-Rolled Alloy

Bridgeport,Conn.(10)S15 6.45
Carnegie,Pa. S18 .....6.45
Fontana,Calif. K1 .....7.80
Gary,Ind. U5 .....6.40
Houston,Tex. S5 .....6.90
KansasCity,Mo. S5 ....7.10
LosAngeles B3 .....7.60
NewBritn.,Conn.(10)S15 6.45
Sharon,Pa. S3 .....6.45
So.Chicago W14 .....6.40
Youngstown U5 .....6.40

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2 ....5.65
Conshohocken,Pa. A3 ..6.20
Ecorse,Mich. G5 .....6.50
Fairfield,Ala. T2 .....5.65
Fontana,Calif. K1 .....7.05
Gary,Ind. U5 .....5.95
Ind Harbor,Ind. I-2 ....5.95
Ind Harbor,Ind. Y1 .....6.45
Lackawanna,N.Y. B2 ..6.00
LosAngeles(25) B3 ....6.40
Seattle(25) B3 .....6.65
Sharon,Pa. S3 .....5.95
So.SanFrancisco(25)B3 .6.40
SparrowsPoint,Md. B2 .6.00
Warren,O. R2 .....5.95
Weirton,W.Va. W6 ....6.30
Youngstown Y1 .....6.45
Youngstown U5 .....5.95

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10 ....4.175
Warren,O. 4.525

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6 .....5.80
Bridgeprt,Conn.(10) S15..6.15
Butler,Pa. A10 .....5.45
Cleveland A7, J5 .....5.45
Dearborn,Mich. D3 ....6.05
Detroit D2, P20.....5.95
Detroit M1 .....5.65
Dover,O. G6 .....5.80
Ecorse,Mich. G5 .....5.65
Follansbee,W.Va. F4 ...5.45
Fontana,Calif. K1 .....7.35
FranklinPark,Ill.(40) T6.5.70
Ind.Harbor,Ind. I-2 ....5.70
Lackawanna,N.Y. B2 ..5.45
LosAngeles C1 .....7.50
Mattapan,Mass. T6 ....6.30
Middletown,O. A10 ....5.45
NewBedford,Mass. R10 ..6.40
NewBritain(10) S15 ....6.15
NewCastle,Pa.(14) B4 ..5.45
NewCastle,Pa. E5 .....5.95
NewHaven,Conn. A7 ....5.95
NewHaven,Conn. D2 ....6.20
Pawtucket,R.I. R3 .....6.80
Pawtucket,R.I.(21) N8..6.65
Riverdale,Ill. (40) A1 ..5.70
Rome,N.Y.(29) R6 .....5.45
Sharon,Pa. S3 .....5.80
SparrowsPoint,Md. B2 ..5.45
Trenton,N.J. R5 .....7.00
Wall'ford,Conn. W2(50) 6.40
Warren,O.(40) T5 .....5.95
Warren,O. R2 .....5.45
Weirton,W.Va. W6 ....5.45
Worcester,Mass. W19 ...7.05
Youngstown C8 .....5.95
Youngstown Y1 .....5.45

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10)S15 12.15
Carnegie,Pa. S18 .....12.00
Cleveland A7 .....12.00
Dover,O. G6 .....12.00
Fontana,Calif. K1 ....13.65
Harrison,N.J. C18 ....12.00
NewBritn,Conn.(10)S15 12.15
Pawtucket,R.I.(11) N8..12.15
Pawtucket,R.I.(12) N8..12.45
Sharon,Pa. S3 .....12.00
Worcester,Mass. A7 ...12.30
Youngstown C8 .....12.00

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland J5 .....7.80
Cleveland A7 .....8.15
Dearborn,Mich. D3 ....7.90
Dover,O. G6 .....8.00
Ecorse,Mich. G5 .....8.50
Lackawanna,N.Y. B2 ..8.15
Sharon,Pa. S3 .....7.65
SparrowsPoint,Md. 8.15
Warren,O. R2 .....7.60
Weirton,W.Va. W6 ....8.30
Youngstown Y1 .....8.30

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2 .....6.05

STRIP, Electrogalvanized

Dover,O. G6 .....5.70
Warren,O. T5 .....5.70
Weirton,W.Va. W6 ....5.45
Youngstown C8 .....5.95

TIGHT COOPERAGE HOOP

Atlanta A11 .....4.65
Riverdale,Ill. A1 .....4.50
Sharon,Pa. S3 .....4.55
Youngstown U5 .....4.35

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Co.
A7 American Steel & Wire
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.
B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Boiardi Steel Corp.
B8 Braeburn Alloy Steel
B10 E. & G. Brooke, Wickwire Spencer Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co. Div., Buffalo-Eclipse Corp.
B12 Buffalo Steel Div. H. K. Porter Co.
B14 A. M. Byers Co.
B15 J. Bishop & Co.
C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept., Wickwire Spencer Steel Division
C23 Charter Wire Products
C24 G. O. Carlson Inc.
D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.
E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.
F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.
G2 Globe Iron Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
H1 Hanna Furnace Corp.
H7 Helical Tube Co.
I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-7 Indiana Steel & Wire Co.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.
K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.
L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.
M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M16 Md. Fine & Special Wire
M17 Metal Forming Corp.
M18 Milton Electric Steel
N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng.HighCarb.Wire
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N12 Niles Rolling Mill Div.
N14 Nrthwst Steel Roll. Mills
N15 Northwestern S.&W.Co.
N16 New Delphos Mfg. Co.
O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills
P1 Pacific States Steel Corp.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Division Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
P20 Prod. Steel Strip Corp.
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S25 StainlessWeldedProducts
S26 Specialty Wire Co. Inc.
T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W.Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div.,Colo.Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
W19 Worcester Pressed Steel
Y1 Youngstown Sheet&Tube

STRIP, Cold-Finished, Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Berea,O. C7	...	8.00	8.60	10.55	12.85
Bridgeport,Conn.(10) S15	6.15	8.00	8.60	10.55	12.85
Bristol,Conn. W1	...	...	8.90	10.85	...
Carnegie,Pa. S18	...	8.00	8.60	10.55	12.85
Cleveland A7	5.45	7.65	8.60	10.55	12.85
DearbornMich. D3	6.05	8.26	8.85	...	...
Detroit D2	6.45	7.85	8.45	10.55	...
Dover,O. G6	6.05	8.00	8.60	10.55	12.85
FranklinPark,Ill. T6	5.80	7.80	8.75	10.70	...
Harrison,N.J. C18	...	...	8.90	10.85	13.15
Mattapan,Mass. T6	6.30	7.95	8.90	10.85	13.15
NewBritn.,Conn.(10) S15	6.15	8.00	8.60	10.55	12.85
NewCastle,Pa. B4	5.80	8.00	8.60	...	...
NewCastle,Pa. E5	6.95	8.00	8.60	10.55	12.85
NewHaven,Conn. D2	6.70	7.95	8.65	10.50	...
NewYork W3	...	8.30	8.90	10.85	13.15
Pawtucket,R.I. N8:					
Cleve.orPitts Base	...	8.00	8.60	10.55	12.85
Worcester,Mass.,Base	6.65	7.95	8.90	10.85	13.15
Sharon,Pa. S3	...	8.00	8.60	10.55	12.85
Trenton,N.J. R5	...	8.30	8.90	10.85	13.15
Wallingford,Conn. W2	6.65	7.95	8.90	10.85	13.15
Warren,O. T5	6.20	8.00	8.60	10.55	12.85
Weirton,W.Va. W6	5.80	8.00	8.60	10.55	12.85
Worcester,Mass. A7	5.75	7.95	8.90	10.85	13.15
Worcester,Mass. T6	6.30	7.95	8.90	10.85	13.15
Youngstown C8	...	8.00	8.60	10.55	12.85
Spring Steel (Tempered)					
Bristol,Conn. W1	...	...	12.50	15.00	...
FranklinPark,Ill. T6	...	...	12.50	15.00	18.00
Trenton,N.J. R5	...	...	12.50	15.00	18.00
Harrison,N.J. C18	...	...	12.50	15.00	18.00
NewYork W3	...	...	12.50	15.00	18.00
Worcester,Mass. T6	...	...	12.50	15.00	18.00
Youngstown C8	...	...	12.50	15.00	18.00

SILICON STEEL

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (cut lengths ½c lower)	Field	Arma-ture	Elec-tric	Motor	Dyna-mo
BeechBottom W10 (cut lengths)	...	...	8.35	9.60	10.40
Brackenridge,Pa. A4	...	...	8.85	10.10	10.90
GraniteCity,Ill. G4 (cut lengths)	...	...	8.55	9.80	...
IndianaHarbor,Ind. I-2	8.05	8.35	8.85	(34)	...
Mansfield,O. E6 (cut lengths)	7.55	7.85	8.35	9.60	10.40
Newport,Ky. N9 (cut lengths)	...	7.85	8.35	9.60	10.40
Niles,O. N12 (cut lengths)	7.55	7.85	8.35	...	...
Vandergrift,Pa. U5	...	8.35	8.85	10.10	10.90
Warren,O. R2	8.05	8.35	8.85	10.10	10.90
Zanesville,O. A10	...	8.35	8.85	10.10	10.90

SHEETS, SILICON (22 Ga. Base) COILS (Cut Lengths ½c lower)	Transformer Grade 72	65	58	52
BeechBottom W10 (cut lengths)	10.95	11.50	12.20	13.00
Brackenridge,Pa. A4	11.45	...	...	...
Newport,Ky. N9 (cut lengths)	10.95	...	...	...
Vandergrift,Pa. U5	11.45	12.00	12.70	13.50
Warren,O. R2	11.45	...	...	...
Zanesville,O. A10	11.45	12.00	12.70	13.50

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)	...	...	16.05	16.55
Vandergrift, Pa. U5	14.00	14.85	15.85	16.35

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box) Coke (Base Box)	0.25 lb Tb	0.50 lb Tb	0.75 lb Tb
Aliquippa,Pa. J5	$7.40	$7.65	$8.05
Fairfield,Ala. T2	7.50	7.75	8.15
Fairless,Pa. U5	7.50	7.75	8.15
Gary,Ind. U5	7.40	7.65	8.05
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.40	7.65	8.05
Irvin,Pa. U5	7.40	7.65	8.05
Niles,O. R2	7.40	...	...
Pittsburg,Calif. C11	8.15	8.40	8.80
SparrowsPoint,Md. B2	7.50	7.75	8.15
Weirton,W.Va. W6	7.40	7.65	8.05
Yorkville,O. W10	7.40	7.65	8.05

TIN PLATE, American 1.25 Tb	1.50 Tb
Aliquippa,Pa. J5	$8.70	$8.95
Fairfield,Ala. T2	8.80	9.05
Fairless,Pa. U5	8.80	9.05
Gary,Ind. U5	8.70	8.95
Ind.Har. I-2, Y1	8.70	8.95
Irvin,Pa. U5	8.70	8.95
Pitts.,Cal. C11	9.45	9.70
Sp.Pt.,Md. B2	8.80	9.05
Warren,O. R2	8.70	...
Weirton,W.Va. W6	8.70	8.95
Yorkville,O. W10	8.70	8.95

BLACK PLATE (Base Box)	
Aliquippa,Pa. J5	$6.50
Fairfield,Ala. T2	6.60
Fairless,Pa. U5	6.60
Gary,Ind. U5	6.50
GraniteCity,Ill. G4	6.70
Ind.Harbor,Ind. I-2,Y1	6.50
Irvin,Pa. U5	6.50
Niles,O. R2	6.50
Pittsburg,Calif. C11	7.25
SparrowsPoint,Md. B2	6.60
Warren,O. R2	6.50
Weirton,W.Va. W6	6.50
Yorkville,O. W10	6.50

HOLLOWARE ENAMELING Black Plate (29 gage)	
Follansbee,W.Va. F4	6.10
Gary,Ind. U5	6.10
GraniteCity,Ill. G4	6.30
Ind.Harbor,Ind. Y1	6.10
Irvin,Pa. U5	6.10
Yorkville,O. W10	6.55

MANUFACTURING TERNES (Special Coated)	
Fairfield,Ala. T2	$7.85
Gary,Ind. U5	7.75
Irvin,Pa. U5	7.75
Yorkville,O. W10	7.75

MANUFACTURING TERNES, 8 Tb (Commercial Quality)	
Gary,Ind. U5	$9.75
Yorkville,O. W10	9.75

MANUFACTURING TERNES, LT. Coated, 6 Tb	
Yorkville,O. W10	$8.65

ROOFING SHORT TERNES (8 Tb Coated)	
Gary,Ind. U5	9.75

—WIRE—

WIRE, Manufacturers Bright, Low Carbon	
AlabamaCity,Ala. R2	5.525
Aliquippa,Pa. J5	5.525
Alton,Ill. L1	5.75
Atlanta A11	5.775
Bartonville,Ill. K4	5.625
Buffalo W12	5.525
Chicago W13	5.525
Cleveland A7, C20	5.525
Crawfordsville,Ind. M8	5.625
Donora,Pa. A7	5.525
Duluth,Minn. A7	5.525
Fairfield,Ala. T2	5.525
Fostoria,O. (24) S1	5.75
Houston S5	5.925
Johnstown,Pa. B2	5.525
Joliet,Ill. A7	5.525
KansasCity,Mo. S5	6.125
Kokomo,Ind. C16	5.625
LosAngeles B3	6.475
Minnequa,Colo. C10	5.775
Monessen,Pa. P7	5.525
No.Tonawanda B11	5.525
Palmer,Mass. W12	5.825
Pittsburg,Calif. C11	6.475
Portsmouth,O. P12	5.525
Rankin,Pa. A7	5.525
So.Chicago,Ill. R2	5.525
So.SanFrancisco C10	6.475
SparrowsPoint,Md. B2	5.625
Sterling,Ill. (1) N15	5.525
Struthers,O. Y1	5.525
Torrance,Calif. C11	6.475
Waukegan,Ill. A7	5.525
Worcester,Mass. A7	5.825

WIRE, MB Spring, High Carbon	
Aliquippa,Pa. J5	6.925
Alton,Ill. L1	7.15
Bartonville,Ill. K4	7.025
Buffalo W12	6.925
Cleveland A7	6.925
Donora,Pa. A7	6.925
Duluth,Minn. A7	6.925
Fostoria,O. S1	6.925
Johnstown,Pa. B2	6.925
Millbury,Mass. (12) N6	8.725
Minnequa,Colo. C10	7.175
Monessen,Pa. P7	6.925
Monessen,Pa. P16	6.95
Muncie,Ind. I-7	7.125
Palmer,Mass. W12	7.225
Pittsburg,Calif. C11	7.875
Portsmouth,O. P12	6.925
Roebling,N.J. R5	7.225
So.Chicago,Ill. R2	6.925
So.SanFran. C10	7.875
SparrowsPt.,Md. B2	7.025
Struthers,O. Y1	6.925
Trenton,N.J. A7	7.225
Waukegan,Ill. A7	6.925
Worcester A7, J4	7.225
Worcester T6, W12	7.225

WIRE, Upholstery Spring	
Aliquippa,Pa. J5	6.625
Alton,Ill. L1	6.85
Buffalo W12	6.625
Cleveland A7	6.625
Donora,Pa. A7	6.625
Duluth,Minn. A7	6.625
Johnstown,Pa. B2	6.625
LosAngeles B3	7.575
Minnequa,Colo. C10	6.875
Monessen,Pa. P7, P16	6.625
NewHaven,Conn. A7	6.925
Palmer,Mass. W12	6.925
Pittsburg,Calif. C11	7.575
Portsmouth,O. P12	6.625
Roebling,N.J. R5	6.925
So.Chicago,Ill. R2	6.625
So.SanFrancisco C10	7.575
SparrowsPoint,Md. B2	6.725
Torrance,Calif. C11	7.575
Trenton,N.J. A7	6.925
Waukegan,Ill. A7	6.625
Worcester,Mass. A7	6.925

WIRE, Fine & Weaving (8" Coils)	
Alton,Ill. L1	10.75
Bartonville,Ill. K4	10.65
Buffalo W12	10.55
Chicago W13	10.55
Cleveland A7	10.55
Crawfordsville,Ind. M8	10.55
Fostoria,O. S1	10.55
Johnstown,Pa. B2	10.55
Kokomo,Ind. C16	10.55
Monessen,Pa. P16	10.55
Muncie,Ind. I-7	10.75
Palmer,Mass. W12	10.85
Roebling,N.J. R5	10.85
So.SanFrancisco C10	10.90
Waukegan,Ill. A7	10.55
Worcester,Mass. A7, T6	10.85

WIRE, Galv'd ACSR for Cores	
Bartonville,Ill. K4	9.50
Johnstown,Pa. B2	9.50
Monessen,Pa. P16	9.50
Muncie,Ind. I-7	9.70
Roebling,N.J. R5	9.80
SparrowsPt.,Md. B2	9.60

ROPE WIRE	(A)
Alton,Ill. L1	9.45
Bartonville,Ill. K4	9.35
Buffalo W12	9.35
Fostoria,O. S1	9.35
Johnstown,Pa. B2	9.35
Monessen,Pa. P7, P16	9.35
Muncie,Ind. I-7	9.55
Palmer,Mass. W12	9.65
Portsmouth,O. P12	9.35
Roebling,N.J. R5	9.65
SparrowsPt. B2	9.45
Struthers,O. Y1	9.35
Worcester J4 T6	9.65

(A) Plow and Mild Plow; add 0.25c for improved plow.

WIRE, Tire Bead	
Alton,Ill. L1	12.75
Bartonville,Ill. K4	12.65
Monessen,Pa. P16	12.00
Roebling,N.J. R5	12.85

WIRE, Cold-Rolled Flat	
Anderson,Ind. G6	7.45
Buffalo W12	7.45
Cleveland A7	7.45
Crawfordsville,Ind. M8	7.55
Dover,O. G6	7.45
Fostoria,O. S1	7.45
Kokomo,Ind. C16	7.55
FranklinPark,Ill. T6	7.60
Massillon,O. R8	7.45
Monessen,Pa. P16	8.00
Monessen,Pa., P7	7.45
Pawtkt.R.I.(12) N8	7.75
Trenton,N.J. R5	7.75
Worcester A7, T6, W12	7.75

WIRE, Merchant Quality (6 to 8 gage)	An'ld.	Galv.
AlabamaCity R2	6.675	7.075
Aliquippa J5	6.675	7.20*
Atlanta A11	6.925	7.475
Bartonville(19)K4	6.675	7.225
Buffalo W12	6.675	7.075
Cleveland A7	6.675	...
CrawfordsvilleM8	6.775	7.325
Donora,Pa. A7	6.675	7.075†
Duluth,Minn. A7	6.675	7.075†
Fairfield T2	6.675	7.075†
Houston,Tex. S5	7.075	7.475
JohnstownB2(48)	6.675	7.225
Joliet,Ill. A7	6.675	7.075†
KansasCity,Mo.S5	7.275	7.675
Kokomo C16	6.775	7.175
LosAngeles B3	7.625	...
Minnequa C10	6.925	7.325**
Monessen P7 (48)	6.675	7.225
Palmer W12	6.975	7.375
Pitts.,Calif. C11	7.625	8.025†
Prtsmth (18) P12	6.575	...
Rankin A7	6.675	7.075†
So.Chicago R2	6.075	6.325
So.S.Frn (48)C10	7.625	8.025**
Spar'wsPt. B2(48)	6.775	7.325
Sterl'g(1)(48)N15	6.675	7.225
Struthers,O. Y1	6.675	7.175
Worcester A7	6.975	...

* Based on 10c zinc; † 5c zinc; ** Subject to zinc equalization extras.

WIRE (16 gage)	An'ld.	Galv. Stone
Aliquippa J5	10.63	12.72*
Bartonville(19)K4	10.73	12.51
Cleveland A7	12.50	...
Crawfordsville M8	12.50	14.35
Fostoria,O. S1	12.60	14.15
Johnstown B2	12.50	14.35
Kokomo C16	12.60	14.15
Minnequa C10	12.75	14.45**
Palmer,Mass W12	12.50	14.05
Pitts.,Calif. C11	12.85	14.40†
SparrowsPt. B2	12.60	14.45
Sterling(1) N15	10.73	12.15
Waukegan A7	12.50	14.05†
Worcester A7	12.80	...

* Based on 11c zinc; † 5c zinc; ** Subject to zinc equalization extras.

WIRE, Barbed	Col.
AlabamaCity,Ala. R2	153
Aliquippa J5	150*
Atlanta A11	159
Bartonville,Ill. (19) K4	156
Crawfordsville,Ind. M8	159
Donora,Pa. A7	153†
Duluth,Minn. A7	153†
Fairfield,Ala. T2	153†
Houston,Tex. S5	161
Johnstown,Pa. B2	156
Joliet,Ill. A7	153
KansasCity,Mo. S5	165
Kokomo,Ind. C16	155
Minnequa,Colo. C10	159**
Monessen,Pa. P7	157
Pittsburg,Calif. C11	173†
Rankin,Pa. A7	153†
So.Chicago,Ill. R2	153
S. SanFrancisco C10	173**
SparrowsPoint,Md. B2	158
Sterling,Ill.(1) N15	156

† Based on 5c zinc; * 11c zinc; ** Subject to zinc equalization extras.

WOVEN FENCE, 9-15½ Ga.	Col.
AlabamaCity,Ala. R2	140
Ala.City,Ala. 17 ga. R2	235
Ala.City,Ala. 18 ga. R2	245
Aliqp'pa,Pa.9-14½ga. J5	143*
Atlanta A11	146
Bartonville,Ill (19) K4	143
Crawfordsville,Ind. M8	145
Donora,Pa. A7	140†
Duluth,Minn. A7	140†
Fairfield,Ala. T2	140†
Houston,Tex. S5	148
Johnstown,Pa. B2	143
Johnstown 17 ga.,6" B2	234
Johnstown, 4"	237
Joliet,Ill. A7	140†
KansasCity,Mo. S5	152
Kokomo,Ind. C16	142
Minnequa,Colo. C10	148**
Monessen,Pa. 9 ga. P7	145
Pittsburg,Calif. C11	163†
Rankin,Pa. A7	140†
So.Chicago,Ill. R2	140
Sterling,Ill. (1) N15	143

† Based on 5c zinc; * 11c zinc; ** Subject to zinc equalization extras.

BALE TIES, Single Loop	Col.
AlabamaCity,Ala. R2	149
Atlanta A11	152
Bartonville,Ill.(19) K4	149
Crawfordsville,Ind. M8	151
Donora,Pa. A7	149
Duluth,Minn. A7	149
Fairfield,Ala. T2	149
Joliet,Ill. A7	149
KansasCity,Mo. S5	161
Kokomo,Ind. C16	151
Minnequa,Colo. C10	154
Pittsburg,Calif. C11	173
So.Chicago,Ill. R2	149
So.SanFran.,Calif. C10	173
SparrowsPoint,Md. B2	151
Sterling,Ill.(1) N15	149

NAILS, Stock To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	131
Aliquippa,Pa. J5	131
Atlanta A11	134
Bartonville,Ill. (19) K4	131
Chicago,Ill. W13	131
Cleveland A9	137
Crawfordsville,Ind. M8	133
Donora,Pa. A7	131
Duluth,Minn. A7	131
Fairfield,Ala. T2	131
Galveston,Tex. D7	139
Houston,Tex. S5	139
Johnstown,Pa. B2	131
Joliet,Ill. A7	131
KansasCity,Mo. S5	143
Kokomo,Ind. C16	133
Minnequa,Colo. C10	136
Monessen,Pa. P7	131
Pittsburg,Calif. C11	150
Portsmouth,O. P12	132
Rankin,Pa. A7	131
So.Chicago,Ill. R2	131
SparrowsPt.,Md. B2	133
Sterling,Ill. (1) N15	131
Worcester,Mass. A7	137

NAILS, Cut (100 lb keg) to dealers (33)	
Coatesbohocken,Pa. A3	$8.00
Wheeling,W.Va. W10	8.00

STAPLES, Polished, Stock To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	131
Aliquippa,Pa. J5	133
Atlanta A11	136
Bartonville,Ill. (19) K4	133
Crawfordsville,Ind. M8	135
Donora,Pa. A7	133
Duluth,Minn. A7	133
Fairfield,Ala. T2	133
Johnstown,Pa. B2	133
Joliet,Ill. A7	133
Kokomo,Ind. C16	135
Minnequa,Colo. C10	138
Monessen,Pa. P7	133
Pittsburg,Calif. C11	152
Portsmouth,O. P12	132
Rankin,Pa. A7	133
So.Chicago,Ill. R2	131
SparrowsPt.,Md. B2	135
Sterling,Ill. (1) N15	133
Worcester,Mass. A7	139

—FENCE POSTS—

	Col.
ChicagoHts.,Ill. C2, I-2	145
Duluth,Minn. A7 (49)	136
Franklin,Pa. F5	145
Johnstown,Pa. B2	145
Marion,O. P11	145
Minnequa,Colo. C10	150
Moline,Ill. R2	145
So.Chicago,Ill. R2	145
Tonawanda,N.Y. B12	148
Williamsport,Pa. S19	158

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Sizes—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	15.75	list	19.75	2.5	22.25	5	23.75	6.5	23.75	6.5	23	5.75	25.5	8.25
Ambridge, Pa. N2 (†)	15.75	...	19.75	...	22.25	...	23.75	...	23.75	...	23	...	25.5	...
Lorain, O. N3 (*)	15.75	4.5	19.75	5.5	22.25	8	23.75	9.5	23.75	9.5	23	8.75	25.5	11.25
Youngstown Y1 (††)	15.75	list	19.75	2.5	22.25	5	23.75	6.5	23.75	6.5	23	5.75	25.5	8.25

ELECTRIC WELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2 (**)	15.75	0.75	19.75	3	22.25	5.5	23.75	7	23.75	7	23	6.25	25.5	8.75

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Sizes—Inches	⅛		¼		⅜		½		¾		1		1¼		1½	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c		27.6c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28		2.73	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	...	...	...	...	...	...	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
Alton, Ill. L1 (§)	...	...	...	...	...	...	29.25	7	26.25	11	28.75	14.5	31.25	15.5	31.75	16.5
Benwood, W. Va. W10(††)	25.5	+0.75	17.75	+6	10.25	+10.75	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
Butler, Pa. F6 (†)	26.5	+2.75	19.5	+7.25	12.5	+13	...	...	...	...	...	...	...	...	...	...
Etna, Pa. N2 (†)	...	...	...	...	...	...	26.25	7	29.25	11	31.75	14.5	34.25	16.25	34.75	17.25
Fontana, Calif. (§)	...	...	...	...	...	...	13.25	+3	16.25	1	18.75	4.5	21.25	5.5	21.75	6.5
Ind. Harbor Y1 (††)	...	...	...	...	...	...	23.25	9	28.25	13	30.75	16.5	33.25	17.5	33.75	18.5
Lorain, O. N3 (*)	...	...	...	...	...	...	26.25	16	29.25	20	31.75	23.5	34.25	23	34.75	24
Sharon, Pa. S4 (†)	26.5	−0.25	19.5	+4.25	12.5	+8.5	...	...	...	...	...	...	...	...	...	...
Sharon, Pa. M6	...	...	...	...	...	...	26.25	11	29.25	15	31.75	18.5	34.25	19.25	34.75	20.25
Sparrows Pt., Md. B2 (§)	24.5	+1.75	17.5	+6.25	10.5	+10.5	24.25	8	27.25	12	29.75	15.5	32.25	16.5	32.75	17.5
Youngstown R2 (**)	...	...	...	...	...	...	26.25	11	29.25	15	31.75	18.5	34.25	19.25	34.75	20.25
Youngstown Y1 (††)	...	...	...	...	...	...	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
Wheatland, Pa. W9 (§)	24.5	+1.75	17.5	+6.25	10.5	+10.5	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5

Size—Inches	2		2½		3		3½		4	
List Per Ft.	37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft.	3.68		5.82		7.62		9.20		10.89	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	35.25	20	36.75	20	36.75	20	...	...	...	...
Alton, Ill. L1 (§)	32.25	17	33.75	17	33.75	17	...	...	...	...
Benwood, W. Va. W10(††)	35.25	20	36.75	20	36.75	20	27.75	10.5	27.75	10.5
Etna, Pa. (†)	35.25	17.25	36.75	18.5	36.75	18.5	27.75	9	27.75	9
Fontana, Calif. K1 (§)	22.25	7	23.75	7	23.75	7	...	...	...	...
Ind. Harbor, Ind. Y1 (††)	34.25	19	35.75	19	35.75	19	...	...	...	...
Lorain, O. N3 (*)	35.25	24.5	36.75	23	36.75	23	...	...	...	...
Sharon, Pa. M6	35.25	20.75	36.75	20.5	36.75	20.5	...	...	...	...
Sparrows Pt., Md. B2 (§)	32.25	18	34.75	18	34.75	18	25.75	8.5	25.75	8.5
Youngstown R2 (**)	35.25	20.75	36.75	20.5	36.75	20.5	27.75	11	27.75	11
Youngstown Y1 (††)	35.25	20	36.75	20	36.75	20	...	...	...	...
Wheatland, Pa. W9 (‡)	35.25	20	36.75	20	36.75	20	...	...	...	...

Galvanized pipe discounts based on zinc price of: (†), 14c; (‡), 11c to under 12c; (*), 3c; (§), 11.00c; (††), 10.50c-11.50c; with discounts adjusted on price of zinc at time of shipment.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	15	....	21.31	18.44
1¼	13	....	25.24	18.12
1½	13	23.12	27.89	20.01
1¾	13	26.84	32.37	23.66
2	13	30.08	36.28	26.51
2¼	13	34.18	41.23	29.86
2¼	12	37.10	44.75	32.41
2½	12	40.51	48.86	35.70
2¾	12	43.85	52.90	38.66
3	12	45.92	55.39	41.23

RAILWAY MATERIALS

RAILS	Std. No. 1	Std. No. 2	Std. Tee All No. 2	Rails 60 lb Under
Bessemer,Pa. U5	4.325	4.225	4.275	5.20
Ensley,Ala. T2	4.325	4.225	....	5.20
Fairfield,Ala. T2	....	....	....	5.20
Gary,Ind. U5	4.325	4.225	4.275	...
Huntington,W.Va. W7	....	....	....	5.20
IndianaHarbor,Ind. I-2	4.325	4.225	4.275	...
Johnstown,Pa. B2	....	....	....(16)	5.20
Lackawanna,N.Y. B2	4.325	4.225	....	5.20
Minnequa,Colo. C10	4.325	4.125	....	5.70
Steelton,Pa. B2	4.325	4.225	....	...
Williamsport,Pa. S19	....	....	....	5.20

TIE PLATES

Fairfield,Ala. T2	5.125
Gary,Ind. U5	5.125
Ind Harbor,Ind. I-2	5.125
Lackawanna,N.Y. B2	5.125
Minnequa,Colo. C10	5.125
Pittsburg,Calif. C11	5.275
Seattle B3	5.275
Steelton,Pa. B2	5.125
Torrance,Calif. C11	5.275

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	11.00
Lebanon,Pa. B2	11.00
Minnequa,Colo. C10	11.00
Pittsburgh O3, P14	11.00

JOINT BARS

Bessemer,Pa. U5	5.275
Fairfield,Ala. T2	5.275
Ind.Harbor,Ind. I-2	5.275
Joliet,Ill. U5	5.275
Lackawanna,N.Y. B2	5.275
Minnequa,Colo. C10	5.275
Steelton,Pa. B2	5.275

AXLES

Ind.Harbor,Ind. S13	6.50
Johnstown,Pa. B2	6.50

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	7.05
KansasCity,Mo. S5	7.30
Lebanon,Pa. B2	7.05
Minnequa,Colo. C10	7.05
Pittsburgh J5	7.05
Seattle B3	7.55
So.Chicago,Ill. R2	7.05
Struthers,O. Y1	7.05
Youngstown R2	7.05

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh; f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great.

Structural ½-in. larger 8.90c
⅞-in. under ..... 26.5 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers ..... List

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants, per cent off list for less than case lots to consumers)

6 in. and shorter:	
½-in. & smaller diam	4
⅝-in. & ¾-in.	0
⅞-in. and larger	4
Longer than 6 in.:	
All diams.	+4
Lag bolts, all diams.:	
6 in. and shorter	12
Over 6 in. long	8
Ribbed Necked Carriage	0
Blank	20
Plow	20
Step, Elevator, Tap and Sleigh Shoe	12
Tire Bolts	List
Boiler & Fitting-Up Bolts	23

NUTS

H.P. & C.P., regular & heavy: Square, all sizes	58
H.P., Hex, regular & heavy: ¾" and smaller	58
⅞" to 1½", inclusive	60
1¾" to 1½", inclusive	62
1⅝" and larger	58
C.P. Hex, regular heavy: All sizes	58
Hot Galv. Nuts (all types): ¾" and smaller	40
⅞" to 1½", inclusive	43

Finished Hex Nuts: New standard, all sizes 58

Semifinished & Slotted Hex.: Regular and heavy, all sizes 58

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam x 6 in. and shorter	34
1 in. and smaller diam x over 6 in.	20

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	34
¼ in. diam & larger	14
N.F. thread, all diams	8

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish	47.5 & 10
Plated finishes	30 & 10

HEXAGON CAP SCREWS

(1020 steel, packaged, per cent off list)

6 in. or shorter:	
⅝-in. & smaller	38
¾-in. through 1 in.	22
Longer than 6 in.:	
⅝-in. and smaller	20
¾-in. through 1 in.	7

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

	Cents
Sponge iron:	
98.5% Fe, annealed	18.00
Unannealed	14.50
Swedish, c.i.f. N.Y., c.l., in bags	11.25
Electrolytic iron:	
Annealed, 99.5% Fe	42.50
Unannealed (99% Fe)	36.50
Unannealed (99% Fe, minus 325 mesh)	53.50
Powder Flakes	48.50
Carbonyl Iron:	
97.9-99.8% size 5 to 10 microns	83.00-148.00
Aluminum:	
Carlots, freight allowed	31.00
Atomized, 500 lb drums, freight allowed	34.00
Antimony, 500 lb lots	78.00
Brass, 20-ton lots	29.50-36.50
Bronze, 10-ton lots	51.00-60.00
Copper:	
Electrolytic	43.25
Reduced	43.25
Lead	21.75
Magnesium	75.00-85.00
Manganese:	
Minus 100 mesh	57.00
Minus 35 mesh	52.00
Minus 200 mesh	62.00
Nickel unannealed	89.50
Nickel-Silver 5-ton lots	47.00
Silicon	38.50
Solder	8.50*
Stainless Steel, 302	91.00
Tin	14.00*
Zinc, 10-ton lots	17.50-25.00

	Dollars
Tungsten	
Melting grade, 99% 60 to 200 mesh:	
1000 lb and over	5.35
Less than 1000 lb	5.50
Chromium, electrolytic 99.9% Cr min.	3.50

*Plus cost of metal.

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅜" ... 1 7/16"; 1 7/16" to 1 15/16" 4.85c; 1 15/16" to 2 5/16" 4.95c.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ½" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven, Conn., base.
(22) Del. San Francisco Bay area.
(23) 20 Ga., 36" wide.
(24) Deduct 0.10c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing mill lengths, to fabricators; to consumers, 5.40c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; add 0.35c for universal mill.
(32) Rd. or square edge.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter: 60" & narrower.
(38) 14 gage & lighter 48" and narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(48) 6.7 gage.
(49) U post; add 2 cols. for T post.
(50) 0.025 gage; 6.55c for 0.026 to 0.068 gage; 6.65c for 0.069 gage and over.

STAINLESS STEEL MILL PRICES

(Representative prices, cents per pound; subject to current lists of extras)

AISI Type	Rerolling Ingots	Rerolling Slabs, Billets	Forging Billets	Seamless Tube Billets	H.R. Strip	Shapes; H.R. & C.F. Bars; Wire	Plates	Sheets	C.R. Strip; Flat Wire
301	16.25	20.50	29.50	34.25	29.75	35.25	37.25	46.25	38.25
302	17.25	22.75	29.75	34.50	32.00	35.50	37.50	46.50	41.50
302B	18.50	24.50	30.50	34.50	25.00	35.50	37.50	48.75	44.75
303	18.75	24.75	32.25	37.25	36.75	38.25	39.75	48.75	45.50
304	18.25	23.75	31.00	36.00	34.25	37.25	39.75	48.75	43.75
304L	....	....	36.75	....	....	42.75	45.25	54.25	49.00
308	19.50	25.50	....	36.25	37.00	37.50	42.00	51.75	46.75
308	19.75	26.25	35.25	40.75	38.00	42.00	46.00	55.25	48.00
309	26.50	34.75	43.25	49.25	49.25	50.50	53.75	63.50	62.00
309S	28.50	37.50	47.50	54.50	54.00	55.50	59.00	68.50	68.50
310	33.00	43.25	56.75	66.25	67.50	67.50	69.00	72.25	78.75
314	....	....	....	....	....	....	69.00	74.50	....
316	28.00	36.25	46.75	54.50	55.00	55.50	59.00	64.50	66.50
316L	....	....	52.50	....	....	61.00	64.25	70.00	72.00
317	33.00	43.50	56.25	66.75	67.50	68.25	70.75	77.00	79.25
318	33.50	44.00	55.25	64.50	66.25	65.50	68.75	78.00	80.25
321	22.75	29.50	35.25	40.75	42.00	42.00	46.00	55.50	54.50
330	....	....	58.00	....	....	68.50	70.00	73.75	77.75
347	24.50	32.26	39.50	45.75	46.50	46.75	51.25	60.75	59.25
403	....	....	27.00	30.75	....	32.00	34.25	44.00	41.25
405	16.50	21.75	25.25	29.25	30.50	30.25	31.75	42.50	39.75
410	14.00	18.25	24.00	27.75	26.25	28.75	30.00	40.75	34.25
416	....	....	24.50	28.25	....	29.25	30.50	41.25	41.25
420	22.00	28.50	29.25	34.00	35.50	35.00	38.50	49.25	52.75
430	14.25	18.50	24.50	28.25	27.00	29.25	30.50	43.50	34.75
430F	....	18.75	25.00	28.75	....	29.75	31.00	44.00	44.00
431	14.50	28.50	25.00	28.25	27.50	29.25	30.50	44.00	35.25
440A,B,C	....	28.50	29.25	34.00	....	35.00	38.50	49.25	52.75
442	....	....	28.00	....	....	30.50	35.25	48.25	47.75
446	....	....	33.75	38.25	63.00	39.50	40.75	59.75	71.00
501	....	....	14.00	14.50	21.25	16.00	18.25	30.50	29.00
502	....	....	15.25	16.00	22.25	17.00	20.00	31.75	30.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; Alloy Metal Wire Co. Inc.; American Steel & Wire Division, U. S. Steel Corp.; Armco Steel Corp.; J. Bishop & Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Wilbur D. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Co.; Fifth Sterling Inc.; Ft. Wayne Metals Inc.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Division, Borg Warner Corp.; Jessop Steel Co.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McLouth Steel Corp.; Metal Forming Corp.; Page Steel & Wire Division, American Chain & Cable Co. Inc.; Republic Steel Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Stainless Welded Products Inc.; Superior Steel Corp.; Timken Roller Bearing Co.; Tube Methods Inc.; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

CLAD STEEL

Cladding Stainless	Plates: Carbon Base 10%	Plates: Carbon Base 20%	Sheets: Carbon Base 20%	Sheets: Copper Base Both Sides
302	....	31.00	31.00	77.00
304	27.60	32.50-32.70	32.50	77.00
310	36.50	41.00	.....	144.00
316	32.60	37.70-42.75	42.75	....
318	37.00	42.20	.....	....
321	29.30	34.40-37.00	37.00	111.00
347	30.40	35.50-40.50	40.50	130.00
405	23.40	30.80	.....	....
410	22.90	30.10	.....	....
430	22.90	30.10	.....	....
Inconel	41.23	54.18	.....	165.00
Nickel	37.50	50.90	.....	....
Monel	38.90	51.80	.....	....
Copper*	....	.....	46.00	....

	Strip, Carbon Base: Cold-Rolled 10%	Cold-Rolled Both Sides	Hot-Rolled 10%	Hot-Rolled Both Sides
Copper*	27.85	35.85	24.00	32.25

*Deoxidized. Production points: Stainless sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont Del. C22 Coatesville, Pa. L7, New Castle, Ind. I-4 and Washington, Pa. J3; nickel, inconel, monel-clad plates Coatesville L7; copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie, Pa. A13.

TOOL STEEL

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.25-.285	5% Cr Hot Work	0.39
Extra Carbon	0.33-.340	W-Cr Hot Work	0.41
Special Carbon	0.35-.360	V-Cr Hot Work	0.43
Oil Hardening	0.370-.39	Hi-Carbon-Cr.	0.665-.70

Grade by Analysis (%) W	Cr	V	Co	Mo	$ per lb
20	25	4.25	1.6	12.25	4.055
18	25	4.25	1	4.75	2.340
18	4	2	9	...	2.565-2.695
18	4	2	....	...	1.820
18	4	1	....	...	1.580-1.660
13.5	4	3	....	...	1.875
6	4	1.9	....	5	1.065
6	4.5	1.9	....	5	1.300
6	4	3	....	6	1.300
2	1.4	1.2	....	...	0.495
1.5	4	1	....	8.5	0.895

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, 88, U4, V2 and V3.

PIG IRON, Gross Ton

F.o.b. furnace prices as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax.

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem,Pa. B2	$58.00	$58.50	$59.00	$59.50
New York, del	....	62.28	62.78	....
Newark, del	61.02	61.52	62.02	62.52
Philadelphia, del.	60.75	61.25	61.75	62.25
Birmingham District				
AlabamaCity,Ala. R2	52.38	52.88	....	....
Birmingham R2	52.38	52.88	....	....
Birmingham U6	....	52.88	....	....
Woodward,Ala. W15	52.38	52.88	....	....
Cincinnati, del.	....	60.43	....	....
Buffalo District				
Buffalo R2, H1	56.00	56.50	57.00	....
Tonawanda,N.Y. W12	56.00	56.50	57.00	....
No. Tonawanda,N.Y. T9	....	56.50	57.00	....
Boston, del.	66.65	67.15	67.65	....
Rochester,N.Y., del.	59.02	59.52	60.02	....
Syracuse,N.Y., del.	60.12	60.62	61.12	....
Chicago District				
Chicago I-3	56.00	56.50	56.50	57.00
Gary,Ind. U5	56.00	....	56.50	....
IndianaHarbor,Ind. I-2	56.00	....	56.50	....
So.Chicago,Ill. W14, Y1	56.00	56.50	56.50	....
So.Chicago,Ill. U5	56.00	....	56.50	57.00
Milwaukee, del.	58.17	58.67	58.67	59.17
Muskegon,Mich., del.	....	62.80	62.80	....
Cleveland District				
Cleveland A7	56.00	56.50	56.50	57.00
Cleveland R2	56.00	56.50	56.50	....
Akron,O., del. from Cleve.	58.75	59.25	59.25	59.75
Lorain,O. N3	56.00	....	....	57.00
Pittsburgh District				
Neville Island,Pa. P6	56.00	56.50	56.50	....
Pitts.,N.&S. sides, Ambridge, Aliquippa, del.	57.37	57.87	57.87	....
McKeesRocks, del.	57.04	57.54	57.54	....
Lawrenceville, Homestead, Wilmerding, Monaca, del.	57.66	58.16	58.16	....
Verona, Trafford, del.	58.19	58.69	58.69	....
Brackenridge, del.	58.45	58.95	58.95	....
Bessemer,Pa. U5	56.00	....	56.50	57.00
Clairton,Rankin,So.Duquesne,Pa. U5	56.00	....	....	....
McKeesport,Pa. N3	56.00	....	....	57.00
Midland,Pa. C18	56.00	....	....	....
Monessen,Pa. P7	56.00	....	....	....
Youngstown District				
Hubbard,O. Y1	....	....	56.50	....
Youngstown Y1	....	....	56.50	57.00
Youngstown U5	56.00	....	....	57.00
Mansfield,O., del.	60.90	....	61.40	61.90

	Basic	No. 2 Foundry	Malleable	Bessemer
Birdsboro,Pa. B10	*58.00*	*58.50*		
Duluth I-3	56.00	56.50	56.50	57.00
Erie,Pa. I-3	56.00	56.50	56.50	57.00
Everett,Mass. I1	*64.00*	*64.50*		
Fontana,Calif. K1	62.00	62.50	....	....
Geneva,Utah C11	57.50	58.00	....	....
GraniteCity,Ill. G4	57.90	58.40	58.90	....
Ironton,Utah C11	56.00	56.50	....	....
LoneStar,Texas L6	52.00	52.50*	52.50	....
Minnequa,Colo. C10	58.00	59.00	59.00	....
Rockwood,Tenn. T3	....	....	56.50	....
Sharpsville,Pa. S6	56.00	56.50	56.50	57.00
Steelton,Pa. B2	58.00	58.50	59.00	59.50
Swedeland,Pa. A3	58.00	58.50	59.00	59.50
Toledo,O. I-3	56.00	56.50	56.50	57.00
Cincinnati, del.	61.76	62.26	....	....
Troy,N.Y. R2	58.00	58.50	59.00	....

*Low phos. southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si; 75 cents for each 0.5% Mn over 1%)

Jackson,O. G2, J1	$67.00
Buffalo H1	68.25

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.45 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls,N.Y. P15	$91.00
Keokuk,Iowa, Openhearth & Fdry, freight allowed K2	95.50
Keokuk, OH & Fdry, 12¼ lb piglets, 16% Si, frt. allowed K2	98.50
Wenatchee,Wash., OH & Fdry, freight allowed K2	95.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$61.00
Rockwood,Tenn. T3	70.00
Steelton,Pa. B2	64.00
Philadelphia, delivered	67.55
Troy,N.Y. R2	64.00

When you install

NORTHERN OVERHEAD ELECTRIC TRAVELING CRANES

you will have fast, safe, dependable materials handling with an extra margin of safety for overloading under peak or emergency operation—the best mechanical and electrical accessory equipment and controls that can be obtained—precise manipulation, minimum maintenance, and maximum efficiency—integrated engineering design and construction of the highest quality. Ask for Catalogs SE-108 and HL-115-R.

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you will get an extra quality, high hook lift, heavy duty type hoist—the only hoist of this type available. It ranges in capacities from one to 15 tons (100 tons in stationary types) and is adapted for I-beam, monorail or tramrail systems—for floor or cab control—single or variable speeds. Other models also include: double hook, base mounted, and lug suspension hoists. Ask for Bulletin H-113.

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you will save time, maintain production, increase safety with a low cost, simple device which converts your hand powered cranes to motorized control. It can be easily installed by your own mechanics in a few hours without dismantling your present crane. Ask for Bulletin T-105.

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WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except: New York, 30 cents; Philadelphia, 25 cents; Birmingham, Cincinnati, St. Paul, 15 cents.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	Hot Rolled	Cold Rolled	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††§		Carbon	Floor
Baltimore	6.20	7.64	7.81	7.00	...	6.86	8.17¶	12.04	6.98	6.85	7.98
Birmingham	6.10	7.00	8.00²	6.30	...	6.15	8.90	...	6.35	6.35	8.65
Boston	6.89	7.83	9.23	7.13	...	6.87	8.35	12.28	7.06	7.13	8.26
Buffalo	6.18	7.15	9.01	6.79	...	6.35	7.70	12.17	6.59	6.68	7.88
Charlotte, N. C.	6.95	7.80	8.69	6.90	...	7.10	8.37	...	7.10	7.10	8.37
Chicago	6.18	7.12	8.05	6.42	...	6.28	7.30	11.75	6.46	6.33	7.46
Cincinnati	6.51	7.19	8.47	6.72	...	6.58	7.66	12.17	6.93	6.85	7.88
Cleveland	6.18	7.12	7.90	6.58	...	6.34	7.65	11.89	6.79	6.50	7.79
Detroit	6.38	7.31	8.34	6.71	7.36	6.56	7.60	11.92	6.93	6.85	7.80
Houston	7.15	7.85	9.32	7.45	...	7.45	...	...	7.35	7.20	8.55
Jersey City, N. J.	6.54	7.45	8.72	6.82	...	6.75	8.43¶	11.84	6.50	6.67	8.01
Los Angeles	7.25	9.00	9.35	7.55	11.20	7.15	9.10	13.05	7.35	7.20	9.25
Milwaukee	6.35	7.29	8.22	6.59	...	6.45	7.57	11.92	6.63	6.50	7.63
Moline, Ill.	6.53	7.47	8.40	6.77	...	6.63	7.65	...	6.81	6.68	...
New York	6.54	7.45	8.72	6.82	...	6.75	8.43¶	11.84	6.50	6.67	8.01
Newark, N. J.	6.78	7.75	9.02	7.16	...	7.06	8.43¶	...	6.90	6.99	8.30
Norfolk, Va.	6.90	...	...	7.20	...	7.20	8.50	...	7.20	7.15	7.85
Philadelphia	6.53	7.55	8.35	7.02	8.80	6.87	8.19¶	11.89	6.67	6.63	7.65
Pittsburgh	6.18	7.12	8.30	6.55	...	6.28	7.65	11.89	6.46	6.33	7.46
Portland, Oreg.	7.90	9.30	10.00	7.90	...	7.60	10.65	...	7.50	7.55	9.40
Richmond, Va.	6.50	7.45	8.00	7.10	...	7.05	7.95	...	7.10	6.85	8.10
St. Louis	6.48	7.42	8.35	6.72	...	6.58	7.70	12.05	6.86	6.73	7.86
St. Paul	6.84	7.78	8.71	7.08	...	6.94	8.06	...	7.12	6.99	8.12
San Francisco	7.35	8.70	10.15	7.60	...	7.15	9.75	13.05	7.25	7.20	9.25
Seattle	8.15	8.70	10.10	8.02	...	7.58	10.13	13.50	7.50	7.59	9.40
Spokane	8.15	9.25³	10.10	8.50	...	7.60	11.00⁸	14.15	7.25	7.35	9.80
Washington	6.71	8.15	8.35	7.51	...	7.37	8.43	...	7.49	7.36	8.49

*Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gages extra excluded); ‡ includes 35-cent special bar quality extra; § as rolled; †† as annealed; ** ¼" and heavier, 8.09c for No. 12 and lighter. Base quantities, 2000 to 9999 lb except as noted. Cold-rolled strip, 2000 lb and over; Cold-finished bars, 2000 lb and over; ²—500 to 9999 lb; ³—1000 to 1999 lb; ⁸—1000 lb and over; ¶—1500 lb to 3499; ⁹—under ½ in.

Warehouse Steel Sales Tending Upward

Distributor's bookings increased slightly in September . . . and are expected to rise further in October. Demand continues strong for plates and shapes with prices steady

Chicago—Warehouse business is coming back rather nicely and indications are 1953 volume may exceed that of 1951. Last year is ruled out of comparison because of the long steel strike.

Inventory is improving in numerous products including hot and cold-rolled sheets which appear to be in the transitional period. Other gains are in galvanized sheets and light bars. Even some types of plates are getting in better shape. Wide flange structurals in the lighter sizes are the biggest problem and likely will continue so into first quarter. Large rounds may also provide trouble.

New York—Warehouse sales volume has not snapped back to expected levels. Individual orders average smaller. Numerous distributors are cautious in buying stainless. They do not want to be caught with large inventories of 430 and other chromium grades when higher nickel stainless is available. Hope is fading for more 302 series in fourth quarter. Stringency in cold-rolled sheets is rapidly easing. Inventories generally are now in balance, exceptions being heavy flats, large rounds and wide flange beams.

Philadelphia—Experiencing a gain in September business, distributors anticipate further improvement in October. Pressure is strong for plates and shapes. While there is somewhat less interest in sheets and bars, trading in these is expected to continue fairly brisk.

Warehouse inventories are somewhat improved, but there is still a particular scarcity in wide flange shapes, with sellers anticipating little early betterment in this line.

Pittsburgh—Minor inventory building is taking place in sheets by area warehouses. "Sheets are not loose by any means," a source here states. Plates remain hard to get, with heavy plates tightest. Structural shapes are scarce.

Warehousemen expect no falling-off of business in fourth quarter, although buyers are more choosey—less willing to take substitutes. This is true in such items as bars, which have become more plentiful here recently.

Cleveland—Warehouse order volume in September registered an estimated gain of about 10 per cent over that of August. Expectations are sales will hold at about the September level through remainder of the year with buyers inclined toward a more cautious ordering policy.

Mill receipts are improved as compared with some months back but, while over-all stocks are up, they are still unbalanced as regards sizes and certain products. Structurals appear to be in tightest supply, but plates and sheets also are still on the tight list.

Prices generally are firm. However, reports are heard of occasional shading, notably on secondary steel items. Some competition also is being encountered from consumers disposing of excess stocks at sacrifice prices.

Cincinnati—Business in September is running neck-and-neck with August, with the result that September looks good.

San Francisco—Warehouse operators find wide-flange structurals, sheared plates and cold-rolled sheets the items in tightest supply. Hot-rolled sheets are easier to obtain and there is ample supply of galvanized sheets.

Los Angeles—In the face of softer demand for bars, distributors have postponed purchases of this item in all grades and sizes.

Seattle—Warehouse inventories have greatly improved the last six months and are reported 80 to 85 per cent of normal. Flat-rolled steel is scarce but normal conditions are expected in first quarter next year. Prices throughout the warehouse list are firm.

Steelmakers Still Comfortably Booked

Fourth quarter opens with mill backlogs assuring high-level operations through remainder of year. Openings in schedules resulting from cancellations are being filled

Sheet and Strip Prices, Page 146 & 147

Philadelphia Leading sheet sellers have entered the fourth quarter with a carryover of at least two weeks, and despite cutbacks and some cancellations, reflecting particularly the stuffing off in automotive requirements, prospects point to good operations throughout remainder of the year.

One large seller is booked up solidly for the final quarter on cold-rolled sheets, and hasn't much capacity left in hot-rolled.

Galvanized sheets are freer, according to most producers, but they are not yet in full balance with demand.

Enameling sheets are somewhat more plentiful, and as a result there is now less substitution of cold-rolled sheets. Electrical sheets are still tight. Stainless sheets are in easy supply.

In opening books for commercial tonnage for first quarter, as most producers will be doing soon, mills anticipate the necessity of doing more selling than heretofore.

Boston Sheet producers out of this area on hot and cold-rolled, are not soliciting fourth quarter business on which freight would have to be absorbed. These same mills are after specialty tonnage, stainless, electro-coated, galvanized and more electrical grades. On some of these, orders extend into December, although stainless is available earlier.

More specialty tonnage is offered and supplies are ample in most grades. While some mills are out of this market except for specialties, nevertheless, more hot and cold-rolled volume is being offered with shipments heavy.

Cold-rolled carbon orders up to 36-inches wide are being taken by the Morrisville, Pa. producer and the range will soon extend to 48-inches.

New York One manufacturer of refigeration equipment says he is able to buy an adequate amount of enameling stock for the first time since 1947, due to easing supply, rather than to any let up in his requirements. Certain other consumers report this material is a little freer but that they still are unable to get all they want for fourth quarter. Stainless sheet demand, especially the straight chromium grade, is off further and is reflected in the availability of this material. On the other hand, electrical sheets are scarce.

Pittsburgh Sheet producers are pleasantly surprised by the strength shown in the market. Demand appears to be running strong through the remainder of this year.

Cleveland Sheetmakers are entering fourth quarter with sufficient orders on their books to assure high-level operations through the remainder of the year.

While buyers are shying away from premium-priced tonnage the order load of the larger producers appears about as heavy as ever though pressure for shipments is off somewhat.

Eventually this is expected to give rise to freight absorption by mills finding themselves at a disadvantage freightwise to a large part of the market they have been serving in recent years. It already is reflected in shaving, in some instances disappearance, of premium prices.

Chicago An important sheetmaker in this area reports its customers want more tonnage than it can provide in both fourth and first quarters. Recent cancellations are drying up. The good demand is credited as due to the determination of many consumers to eliminate premium material in favor of mill shipments exclusively and to a solid, if reduced, business level. Electrical sheets constitute the only flat-rolled product this mill has in free supply.

Cincinnati Large producers are operating close to full capacity. They seem little affected by the falling demand which has hit the smaller premium price producers.

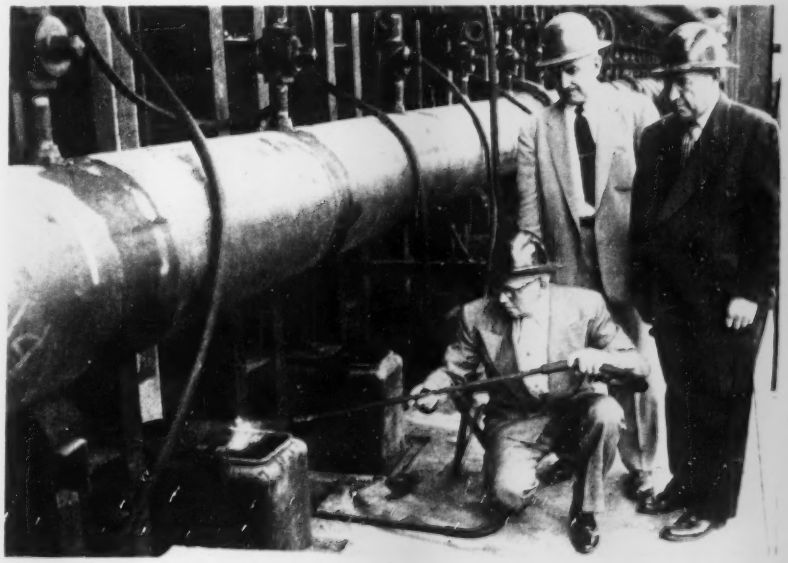
Birmingham Except for some relaxing of delivery pressure, there is little change in the general sheet market situation in this district.

Los Angeles Slackening requirements of sheet and strip consumers is affecting over-all demand at mill level. Cold-rolled strip mills' tonnage for fourth quarter will be slightly higher than in third quarter due to better hot strip supply.

Tin Plate . . .

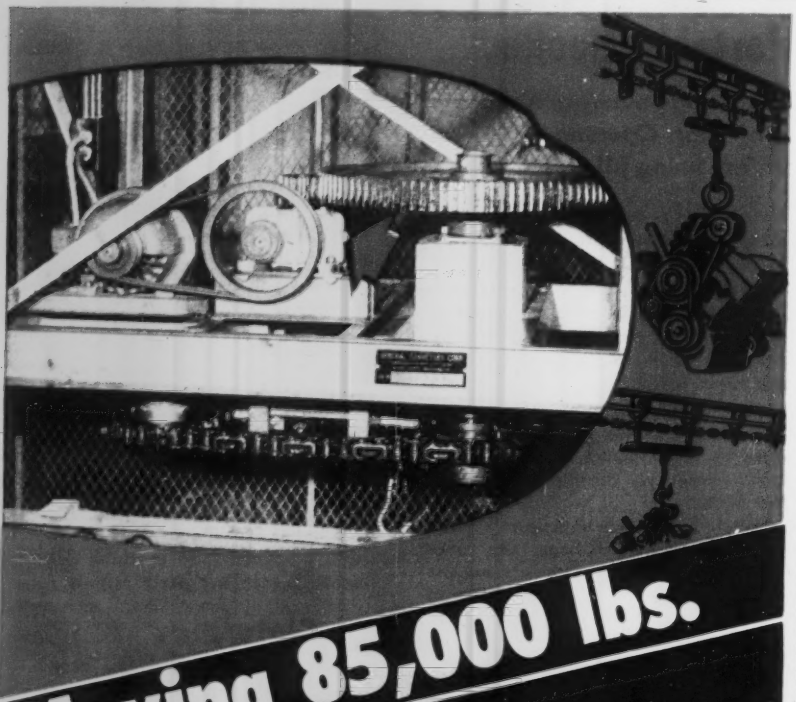
Tin Plate Prices, Page 148

Washington Shipments of metal cans in July amounted to 446,040 net tons of steel, against 357,201 in June and 423,894 in July, 1952, reports the Census Bureau, Department of Commerce. Cumulative total for the first seven months this year was 2,212,463 net tons, comparing with 2,059,102 in the corresponding period of last year.



American Steel & Wire Relights 45 Coke Ovens

Emmett A. Brady, superintendent of American Steel & Wire Division's Cleveland Coke Works, applies torch as rebuilt "D" battery of 45 coke ovens were relighted Sept. 17 following a rebuilding program of about five months. Standing behind Mr. Brady are Harry L. Jenter (left) Cleveland district manager of operations for United States Steel Corp.'s American Steel & Wire Division, and George A. Curran, a department superintendent at the Coke Works



Moving 85,000 lbs. on a conveyor with a 3" CONE-DRIVE

This 3-hp. drive unit, made by General Conveyors Corp., Van Dyke, Michigan, for a 1500-ft. long monorail conveyor, carries half the load of moving 170,000 pounds of V-8 automotive engines hour after hour, month in and month out. It's the kind of modern installation that demands continuous trouble-free operation.

That's why General Conveyors engineers specified standard 3-in. center distance, 15 to 1 ratio, Cone-Drive speed reducers for each of the two synchronized drives.

The ruggedness and maintenance-free long wear life of standard Cone-Drive reducers make them 'naturals' for conveyor drives. In addition, original units or replacement parts for these units can be delivered off-the-shelf for any emergencies.

Standard double-enveloping Cone-Drive gearsets and reducers have greater contact per tooth, more teeth in contact, increased load capacity, greater shock load capacity, longer life, lighter weight—and fewer overall cost.

Ask for "Cone-Drive Gears at Work in Materials Handling." (Bulletin #MH-53) for more case histories.

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Division Michigan Tool Company
DOUBLE ENVELOPING GEAR SETS & SPEED REDUCERS
7171 E. McNichols Road • Detroit 12, Michigan

Structural Shapes . . .

Structural Shape Prices, Page 146

Philadelphia—While new awards haven't been heavy recently, structural fabricators are still figuring on a substantial amount of work, and, despite the prospect of a seasonal letdown as the fall season advances, anticipate reasonably good business for some weeks to come.

Actually the large and medium sized shops have backlogs averaging five months and beyond.

Seattle—Sizable structural tonnage is involved in a number of pending projects, largely public works. These include several defense jobs in Alaska.

Steel Bars . . .

Bar Prices, Page 146

Pittsburgh—Alloy barmakers report slow sales. Inventory adjustment is thought reflected. Demand for hot rolled carbon bars is also slackening. Fabricators can obtain delivery from mills quickly.

American Steel & Wire Division, U. S. Steel Corp., issued a new extra book on cold-finished carbon steel bars Sept. 15. It supersedes its list dated Apr. 30, 1953.

A new table shows extras for near squares where difference between width and thickness falls within limits of 4 1-16 inch. That section is subject to an extra in addition to flat size extras. A second new section shows extras for carbon and manganese in combination.

Charges for extras for size and quantity remain the same except that charges are reduced for quantities between 500 and 1999 pounds.

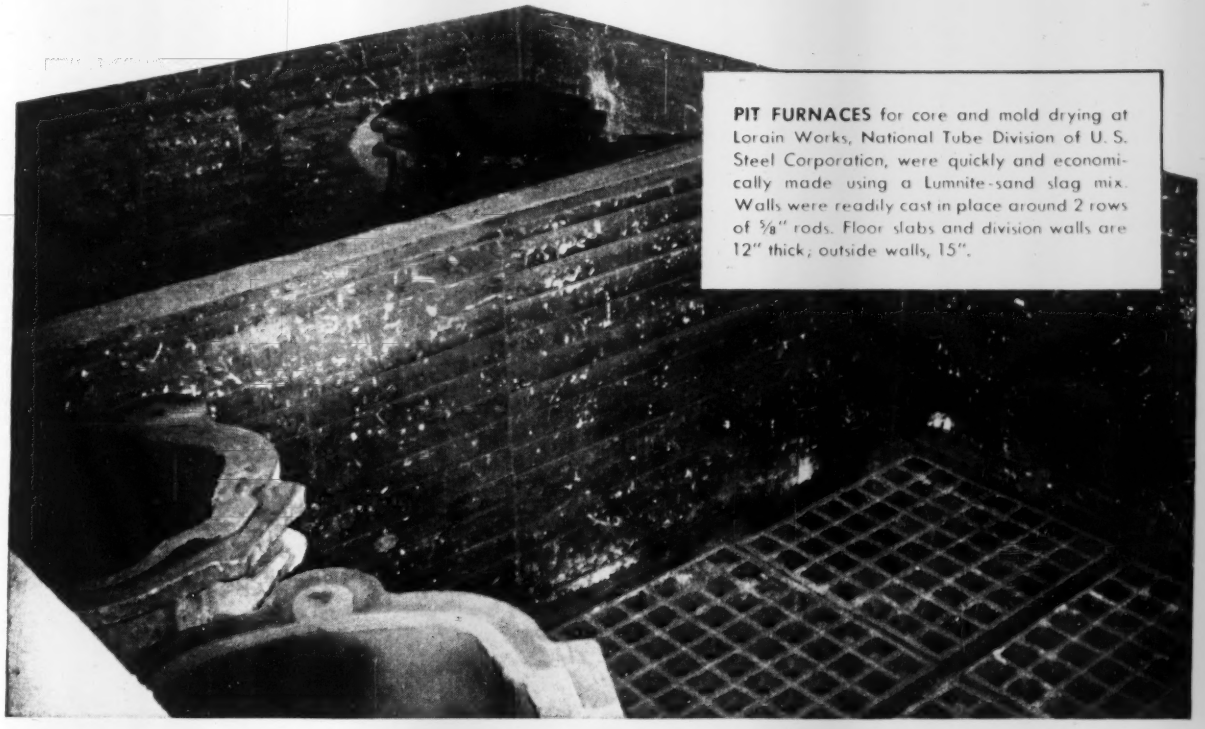
Boston—Cancellations, deferments and rescheduling have subsided on hot-rolled and cold-finished carbon bars. November bookings are more stable in character, but forward buying is retarded by substantial improvement in deliveries, notably hot-rolled. With converters taking less tonnage, some producers are making shipment in three weeks and less.

Alloy demand is quiet and there are openings in November schedules.

New York—Hot-rolled carbon bar sellers still have some capacity available for fourth quarter, including a little in the larger sizes of bars which have been especially scarce until recently. However, producers anticipate no difficulty in maintaining a high rate of operations over the remainder of the year, and are now opening their books for first quarter business.

Philadelphia—Bar sellers are accepting rated tonnage for first quar-

Heat Resistant Concrete in pit furnaces still sound after two years' hard use



PIT FURNACES for core and mold drying at Lorain Works, National Tube Division of U. S. Steel Corporation, were quickly and economically made using a Lumnite-sand slag mix. Walls were readily cast in place around 2 rows of ⅝" rods. Floor slabs and division walls are 12" thick; outside walls, 15".

THESE PIT FURNACES for core and mold drying get bumped and nudged as heavy multi-ton core molds are hoisted in and out. In addition, the Lumnite Concrete is subjected to heating-cooling cycles that damage regular concrete. But over 2 years' continuous service to date proves that Heat-Resistant Concrete made with Lumnite can take it!

Lumnite Concrete has low volume change needed to withstand periodic heating-cooling cycles and thermal shock. Also there are no small units or joints in smooth monolithic construction which could be loosened by either periodic heating or catching projections on the huge molds.

Lumnite Concrete saves time and money from the start. One-piece walls are simply cast in place or "shot" on by cement gun. And Lumnite Concrete reaches service strength in 24 hours or less. So construction or repairs go *fast*.

This speed and economy pays off on many other jobs. Make heat-resistant, refractory or insulating refractory concrete (to 2600°F. service) simply by using a suitable aggregate and Lumnite calcium-aluminate cement.

FOR CONVENIENCE — use castable refractory mixes of Lumnite and selected aggregates to meet specific temperature and insulation requirements. Made by manufacturers of refractories and sold by their dealers. For more information write: Lumnite Division, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

**"LUMNITE" is the registered trade mark of the calcium-aluminate cement manufactured by Universal Atlas Cement Company.*

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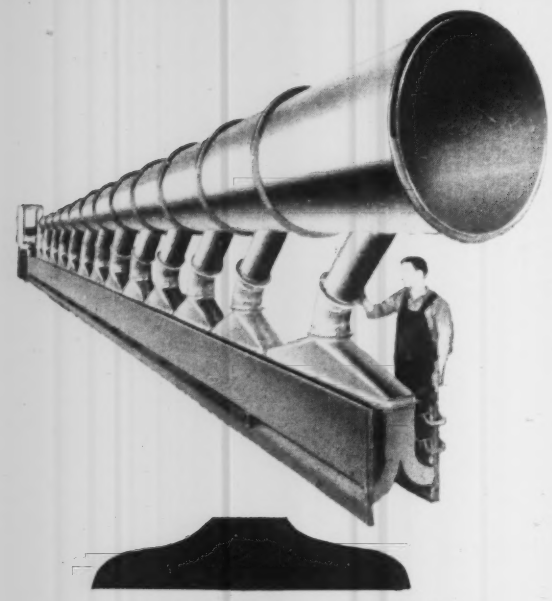
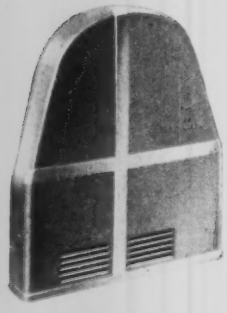
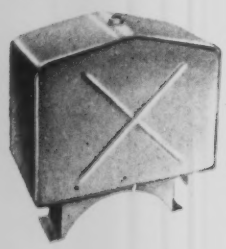


SHEET METAL FABRICATION

by KIRK AND BLUM





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ASK FOR BOOKLET: "SHEET METAL ASSEMBLIES" 40-Page booklet shows typical examples of Kirk & Blum fabrication for jobs ranging from one unit to thousands.

KIRK AND BLUM
METAL FABRICATION

ter, and shortly will open books on commercial tonnage for the period.

In formally opening first quarter books some producers will offer allotments along somewhat the same pattern as heretofore.

Some buyers may want more, and it appears to be a good bet that those who do will be able to get it. Less protective buying is expected and with less defense work more attention to keeping inventories within modest bounds is seen. In this general area there will be more bar capacity, what with the new mill at Fairless, Pa., going into operation late this year. All this should make for a freer bar supply.

Currently, large rounds are easier, reflecting cancellations and stretchouts in shell tonnage.

While there has been some carryover into the new quarter, producers believe they will be current well before the month is over on most sizes of hot-rolled carbon bars. Hot-rolled alloy bars are easy, as are stainless bars and stainless wire.

Cleveland—Bar mills enter fourth quarter with order books well filled though demand pressure is off from some consuming directions. Consumers are more disposed to order more realistically with supply-demand balance approaching. In the smaller sizes such balance has been achieved, but the larger sizes, notably rounds, are still relatively scarce.

Sellers anticipate little trouble filling first quarter order books when they open for that period.

Chicago—Small bars, both hot-rolled and cold-finished, continue in fairly ample supply as they have been for some time past. Such is not the case as regards large sizes, however, particularly large rounds, despite some recent decline in demand.

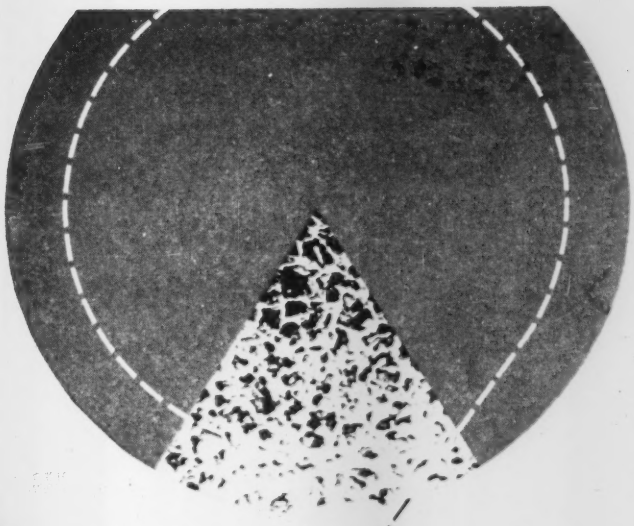
Los Angeles—Bar demand continues weak. Cold-drawers' bookings for fourth quarter started out strong but weakened for November and December.

Reinforcing Bars . . .

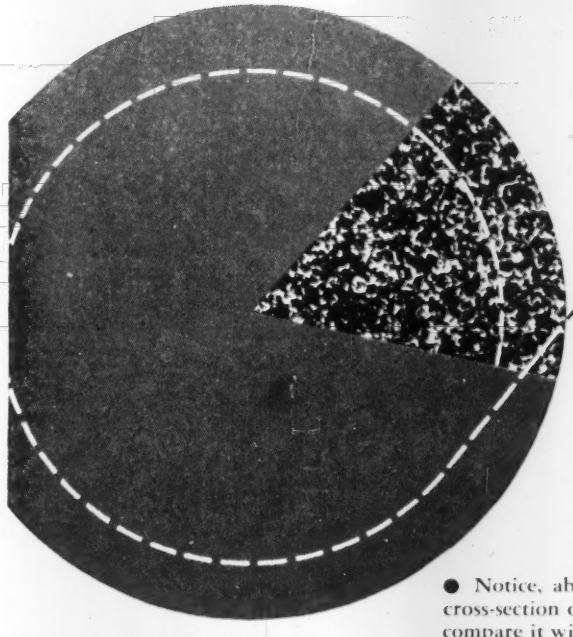
Reinforcing Bar Prices, Page 116

Philadelphia—Reinforcing bar inquiry is featured by a 25-story state office building, Harrisburg, Pa., with plans being issued for figuring by Nov. 5. Estimates as to the bar tonnage required will be available shortly. In addition to bars there will be about 400 tons of shapes, it is said.

Seattle—Mills are operating near capacity here. Small jobs are numerous and total considerable volume. Backlogs are substantial.



The "decarb" (light-colored) area in the ordinary heat-treated bar at right must usually be removed before parts can be made from the stock



Notice that this Republic carbon corrected alloy steel bar has had full carbon content restored to outer edges by carbon correction.

HERE IS WHERE Republic Carbon-Corrected Alloy Steel Bars help you make a profit

● Notice, above at the right, the "decarb" area in the outer edge of the cross-section of a cold drawn alloy steel bar as ordinarily heat treated. Then compare it with the cross-section below at the left. Notice how the carbon has been restored by carbon correction even to the extreme outer circumference.

Here, in the outer rim of Republic Carbon-Corrected Alloy Steel Bars, is the profit-area for your machine tools . . . the part of the bar you don't have to machine away into chips and shavings.

Let our Republic 3-Dimension Metallurgical Service work with your metallurgists and production men to adapt Republic Carbon-Corrected Cold Drawn Alloy Steel Bars to your products. Your Republic Steel salesman can arrange for the Republic Field Metallurgist to call at your convenience.

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. . . combines the extensive experience and coordinated abilities of Republic's *Field*, *Mill* and *Laboratory* Metallurgists with the knowledge and skills of your own engineers. It has helped guide users of Alloy Steels in countless industries to the correct steel and its most efficient usage. IT CAN DO THE SAME FOR YOU.

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She'd been exposed to polio. A new serum, *Gamma Globulin*, made from blood, helped ward off the dread disease. She thanks you for her life.

A tornado whipped suddenly across her home town. She was badly injured by falling debris. But a quick operation, several transfusions pulled her through. She thanks you for her life.

Each one of these people is alive today because someone gave blood.

If you've given blood before, you know how easy it is—how quick and painless. And you know what a wonderful feeling it is when you realize that what you've done may give another person his life.

Now you are asked to give blood . . . again and again. And you can do it safely every 3 months.

Because America's need for blood has increased enormously—for our armed forces, for accident and disaster victims at home, for new disease-fighting serums.

Many a life hangs in the balance! Will you help? Call your Red Cross, Armed Forces or Community Blood Donor Center today!

BUSINESS EXECUTIVES CHECK THESE QUESTIONS

If you can answer "yes" to most of them, you—and your company—are doing a needed job for the National Blood Program.

- ◯ HAVE YOU GIVEN YOUR EMPLOYEES TIME OFF TO MAKE BLOOD DONATIONS?
- ◯ HAS YOUR MANAGEMENT ENDORSED THE LOCAL BLOOD DONOR PROGRAM?
- ◯ HAS YOUR COMPANY GIVEN ANY RECOGNITION TO DONORS?
- ◯ HAVE YOU INFORMED EMPLOYEES OF YOUR COMPANY'S PLAN OF CO-OPERATION?
- ◯ DO YOU HAVE A BLOOD DONOR HONOR ROLL IN YOUR COMPANY?
- ◯ WAS THIS INFORMATION GIVEN THROUGH PLANT BULLETIN OR HOUSE MAGAZINE?
- ◯ HAVE YOU ARRANGED TO HAVE A BLOODMOBILE MAKE REGULAR VISITS?
- ◯ HAVE YOU CONDUCTED A DONOR PLEDGE CAMPAIGN IN YOUR COMPANY?
- ◯ HAVE YOU SET UP A LIST OF VOLUNTEERS SO THAT EFFICIENT PLANS CAN BE MADE FOR SCHEDULING DONORS?

Remember, as long as a **single** pint of blood may mean the difference between life and death for **any** American . . the need for blood is **urgent!**

NATIONAL BLOOD PROGRAM

GIVE BLOOD

...give it again and again

Plates . . .

Plate Prices, Page 146

Philadelphia — Sheared plate demand continues to hold up well, with most producers selling in this district anticipating full operations over the remainder of this year. Demand for oil storage tanks is particularly strong, and tank fabricators report slow progress in getting steel inventories in balance.

Lukens Steel Co. recently announced it is producing a special steel for sulphate digesters. The steel, of the rimming type, is available in the widest range of plate widths, thicknesses and lengths, as well as in a broad range of spun and pressed head sizes and shapes.

Pittsburgh—Consumers are hard pressed to obtain sufficient plate tonnage for their needs with heavy plates in tightest supply. Prospects are fourth quarter will see some easing in pressure but not supply-demand balance.

Birmingham—Plate users are being reasonably well taken care of but there is no surplus plate tonnage.

Los Angeles—Kaiser Steel Corp., Fontana Works, expects to reduce its plate arrearages, now 60 days, to 30 days by first quarter.

Tool Steel . . .

Tool Steel Prices, Page 150

New York — Shipments of high speed and tool steel (exclusive of hollow drill steel) in July totaled 8569 net tons, reports the American Iron & Steel Institute. This was a decline compared with shipments of 11,505 tons in the preceding month but was an increase compared with movement of 5615 tons in July of last year.

Cumulative shipments in the first seven months this year were 72,474 tons, of which 13,558 were Class A high speed steel, 1960 tons Class B, and 57,841 tons, other tool steels. In the like period last year shipments amounted to 73,377 tons, of which 12,242 were Class A, 1441 were Class B, and 59,691 tons, other tool steels.

Tubular Goods . . .

Tubular Goods Prices, Page 149

Pittsburgh — Seamless tubing enters fourth quarter with demand steady. Buttweld orders are spotty, but for every cancellation mills find a new customer.

Seattle—The cast iron pipe market has developed no definite trend. Demand is slow and competition is increasing from other types of pipe.

St. Louis—Pipe demand is softening although fourth quarter book-

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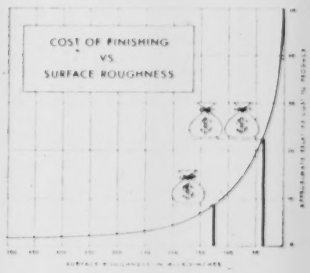
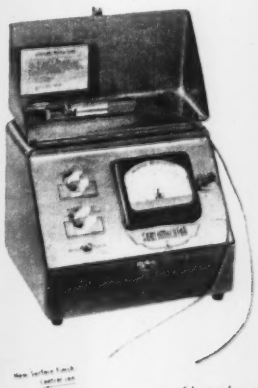
PROPER surface finish control may well yield big savings in your plant by reducing production costs, increasing production rates, and improving product performance.



The chart shows how finishing affects the cost of machined parts. For example, if the surface finish is specified as 125 microinches and you are overfinishing to 32 microinches because of lack of proper gaging equipment, your finishing cost can be twice as much as necessary. To eliminate costly overfinishing, actual checks of machined surfaces should be made in the shop to be sure that specified values are met *but not exceeded.*

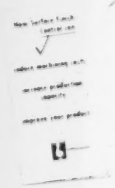
With surface finish control you can eliminate unnecessary operations and operate more efficiently. It helps you improve your products, since surface finish affects many factors in performance, such as break-in time, wear, heat transfer, lubrication, etc.

A new method of Surface Finish Control



THERE is now a simple method of measuring surface roughness on the production line so that the benefits of surface finish control can be realized. The Brush SURFINDICATOR* is a portable inspection tool . . . easy-to-use . . . accurate. This new instrument makes surface roughness measurement a practical shop operation.

*Trade Mark



Get the complete story—get your copy of this new booklet on Surface Finish Control. It offers you the key to reduced machining costs, more efficient use of equipment, and improved products. Write Brush Electronics Company, Dept. PP-10, 3405 Perkins Avenue, Cleveland 14, Ohio.

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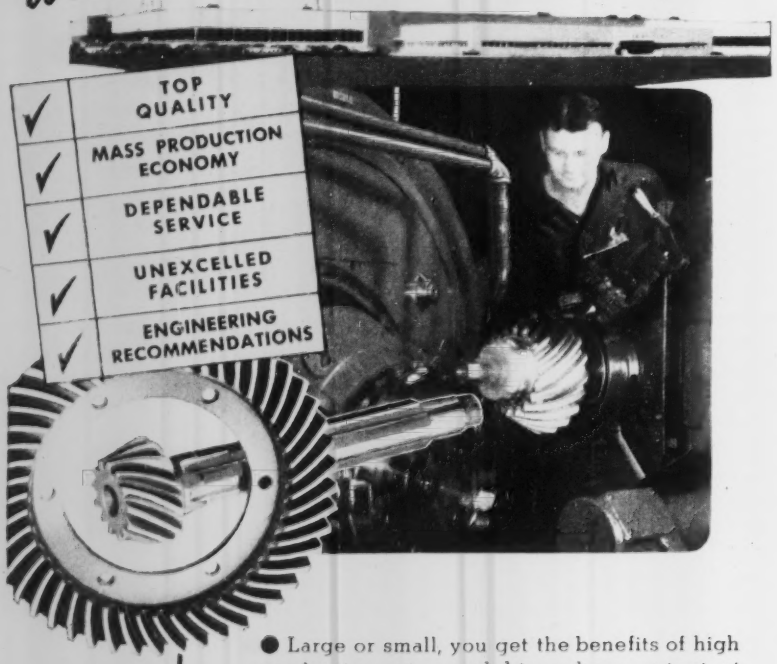

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ings are good. Producers are operating at capacity. Trend of forward ordering is to a month-to-month basis.

Los Angeles—The Southern California Gas Co.'s 73 mile, 30-inch natural gas pipeline in Riverside county, will be constructed by River Construction Co., Ft. Worth, Tex.

Wire . . .

Wire Prices, Page 148

New York—Wire mill backlogs are down. With buying light, many finishing departments are operating under capacity. Orders for November scheduling are slow. Practically all wire products are slack, from weaving wire to heavy fastener stock. Slow demand is attributed to inventory adjustments and in some cases smaller order books with end-use consumers. Delivery on most wire products is prompt.

Boston—Bookings for October are not sufficient to fill capacity on numerous products. November orders are slow and buying through the remainder of this year is expected to be for actual consumption.

St. Louis—Pressure on wire products is slipping. Deliveries are current on all except oil tempered wire. Fourth quarter is filled but occasional cancellations are showing up.

Semifinished Steel . . .

Semifinished Prices, Page 146

Chicago—Inland Steel Co. started dismantling its 40-inch blooming mill Sept. 28 as scheduled, the first step in a month-long process of replacing it with a new 46-inch bloomer. In keeping with this reduced capacity for rolling ingots the company lowered its steelmaking rate to 91.5 per cent for the week ended Oct. 3, a drop of 10 points from the previous week.

Eventually, perhaps in a year, the larger bloomer will show a 15 to 20 per cent increase in production over the old facility.

With the Inland drop in steelmaking the Chicago district ingot rate for the week ended Oct. 3 is only 97.5 per cent, a dip of 2.5 points from the revised rate for the preceding week.

Fairless, Pa.—The Fairless Works, United States Steel Corp., is now producing ingots at full capacity. For the first time all nine open hearths are in operation.

San Francisco—With demand pressure off, steelmakers are taking advantage of the opportunity to make long overdue repairs to furnaces and other facilities.

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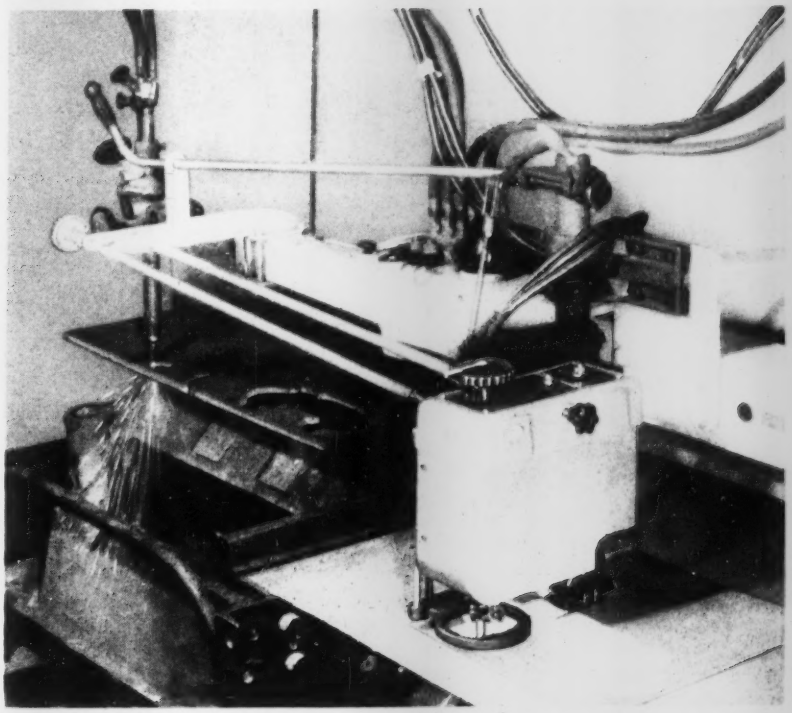

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Pig Iron . . .

Pig Iron Prices, Page 150

New York—Pig iron business continues to lag. Foundry operations show little improvement. Foreign iron is being offered here but no purchases are reported locally. On the standard grades most foreign prices are still not too competitive. However, offgrade iron is being offered at substantially below the domestic market and in some areas to the south is being purchased in fairly good volume. It is reliably reported that approximately 28,000 tons of high phos Swedish iron (.80 to 1.10) have been sold in this country over the past couple of months or so. Prices for delivery at North Atlantic ports are said to average around $50 per gross ton, plus duty. On shipments to some Gulf ports, where competition is especially keen, prices have averaged several dollars a ton less, it is said.

New York—Blast furnace production eased off moderately in August from July, a report from the American Iron & Steel Institute shows.

In yielding 6,471,554 net tons of pig iron and ferroalloys in August, the nation's stacks operated at 96 per cent of capacity, compared with 96.8 per cent in July when output totaled 6,516,487 tons.

Of the country's six blast furnace districts, the southern showed the greatest decline and the lowest rate of output. During August, that district's stacks operated at 85.2 per cent of capacity, compared with 94.5 per cent in July. The southern district is an important area in the production of cast iron pipe, and demand for that product has softened, with a resultant decline in need for pig iron.

Monthly comparisons of blast furnace output follow:

BLAST FURNACE OUTPUT

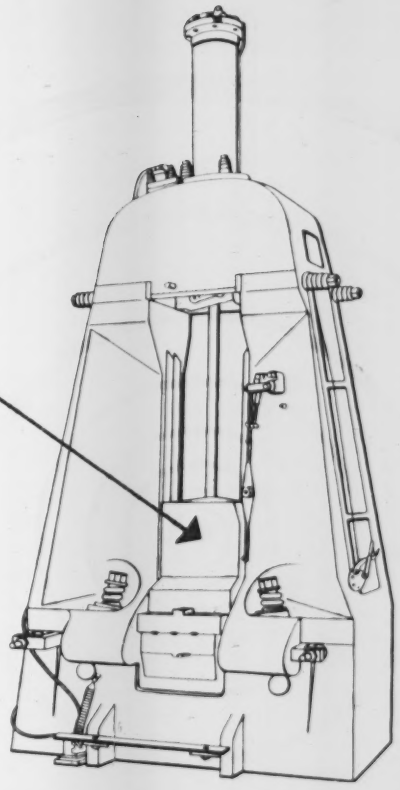
(Net Tons)

1953	Pig Iron	Ferroalloys	Total
Jan.	6,482,081	82,302	6,564,383
Feb.	5,813,202	68,316	5,881,518
Mar.	6,611,040	66,321	6,677,361
Apr.	6,171,939	58,702	6,230,641
May	6,519,082	68,033	6,587,115
June	6,297,559	74,972	6,372,531
1st Half	37,894,903	418,646	38,313,549
July	6,436,345	80,142	6,516,487
Aug.	6,391,749	79,805	6,471,554
1952			
Aug.	5,782,096	48,661	5,830,757

Buffalo—Despite talk of an easier pig iron situation, no merchant iron is being piled. Also, rumblings of lower prices are scoffed at here. Sellers are again looking for business.

Boston—Mystic Furnace's pig iron prices for fourth quarter will be 25 cents per ton lower. Shipments to contract consumers are up slightly but are below production at the

CENTER OF GRAVITY AT POINT OF IMPACT



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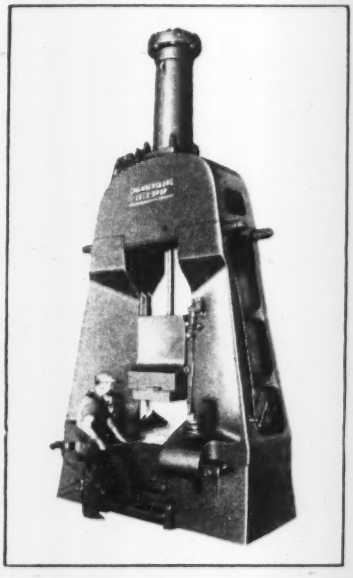

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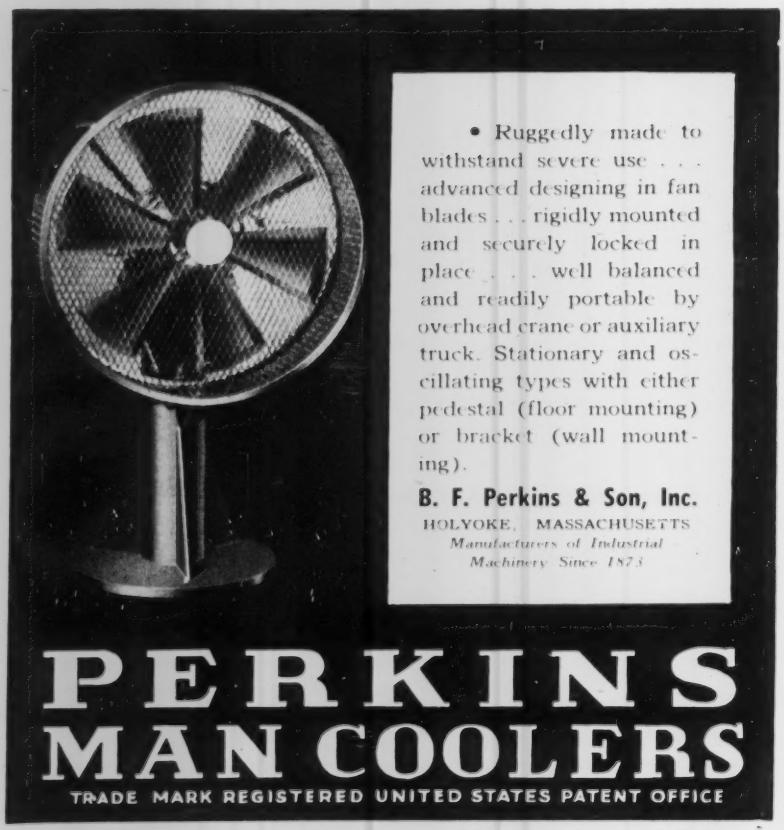

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Everett stack with some iron, foundry and malleable, going into stockpile. More tonnage is offered by outside furnaces, notably in the western New England fringe where Buffalo furnaces are more competitive.

Philadelphia—Pig iron business is spotty with domestic sellers feeling the adverse effects of increased foreign competition and the weakness in scrap. This latter is resulting in a heavier ratio of scrap to pig iron in the melt.

The Birdsboro, Pa., producer has reduced prices $2 per ton to $58, furnace, for basic iron and $58.50, furnace, for No. 2 foundry. This follows recent similar action by the Swedeland, Pa., producer. Base prices now are on a parity with both Swedeland and Bethlehem, Pa.

Pittsburgh—Pig iron is moving slowly as foundry operations continue on the downgrade. Most foundries have lighter order backlogs.

Cleveland—Merchant iron is moving at a slower pace with the foundries increasingly inclined to order against needs and limit inventories. Nevertheless, the furnaces are able to dispose of all their tonnage and no piling of iron is reported in furnace yards. Demand pressure from the automotive casting trade is holding up surprisingly well.

Cincinnati—Jobbing foundries find business slower with some on a four-day week. Most foundries are aiming for three weeks' supply of pig iron.

Chicago—Pig iron business is heading toward a competitive basis—something that hasn't existed in any substantial way in several years. Reduced demand from foundries and better supply of pig is bringing this about.

Of the district's 43 blast furnaces 39 are operating currently. This is two less than were operating at the end of August.

Birmingham—Little increase in demand for pig iron is reported in this section. Merchant sellers attribute the dullness largely to lagging production of pipe and to slowed foundry activity generally.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 169

Washington—Production of coke in July totaled 6,759,085 net tons, a gain of 2 per cent over June output, reports the Bureau of Mines.

Oven coke production in July amounted to 6,340,286 tons, bringing the total for the calendar year to the beginning of August to 43,046,369 net tons. This compares with 33,821,-

(Please Turn to Page 169)

one glance *proves* there's no equal to H-VW-M Bias Sisalweev

See that weave? The sisal is cut *on the bias.* Every fiber is directed *toward* the cutting edge. There's no danger of whole strands flying off at high speed. Every Bias Sisalweev wears *evenly* and outlasts any other design.

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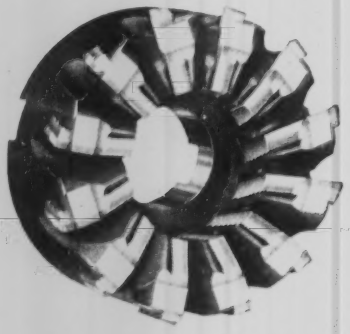

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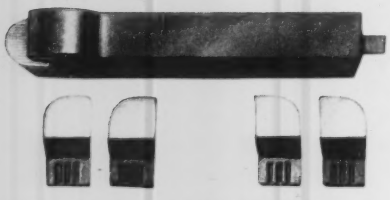
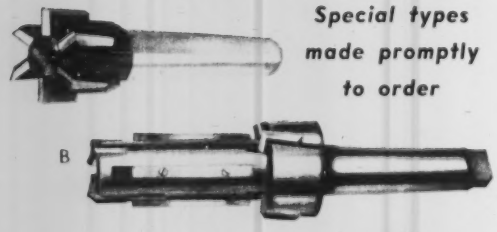


Special types made promptly to order



(A) END MILL. (B) COMBINATION BORING AND FACING MILL. Both are made with tapered, serrated blades adjustable to hold diameters. (C) ALTERNATE ANGLE CUTTER. Slots all widths ½" and over, and all diameters 4" and larger. Blades of H. S. Steel, Super Cobalt, Stellite or Carbide Tipped.

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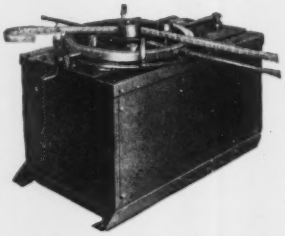
POE MACHINE & ENGINEERING CO., INC.
New Wilmington, Pa. Phone: 2261

KARDONG FOUR-WAY BENDER

For Concrete Reinforcing Bars

Model D-2



The Model D-2 Kardong Bender is a Four Direction Horizontal Bender. With this bender it is not necessary to turn bars over to make reverse or second bends on beam bars. The Model D-2 is made in two sizes, Model D-2 Standard 6-inch, which will bend bars around collars 2-inch to 6-inch, and Model D-2 Special 8-inch, which will bend bars around collars 2-inch to 8-inch. Capacity of both models, 1¼-inch Square Bars. The Model D-2 is a production bender for reinforcing steel fabricating shop. Ask for catalog of our complete line of reinforcing bar benders.

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CURRENT FERROALLOY QUOTATIONS

Prices as reported to STEEL

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton $86, Palmerton, Pa.; $87 Clairton and Duquesne, Pa.
(16 to 19% Mn) $84 per ton, Palmerton, Pa.; $85 per ton, Clairton and Duquesne, Pa.

Standard Ferromanganese: (Mn 74-76%, C 7% approx.) Base price per net ton $200, Clairton, Duquesne, Johnstown and Sheridan, Pa.; add or subtract $2.00 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively.
(Mn 76-80%) 13.15c per pound of contained Mn, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; and Portland Oreg.
(Mn 79-81%) Lump $208 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 27.95c per lb of contained Mn, carload packed 28.7c, ton lots 29.8c, less ton 31.0c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices. 1c for max. 0.30% C, 1.5c for max. 0.50% C, and 4.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max) Add 2.06c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85, C 1.5% max). Carload, lump, bulk 23.35c per lb of contained Mn, carload packed 22.1c, ton lot 22.7c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese metal, 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2% max). Carload, lump, bulk, 36.2c per lb of metal; packed, 36.95c; ton lot 38.45c; less ton lots 40.45c. Delivered. Spot, add 2c.

Electromanganese: Carload, 31.5c; ton lots 33.5c; 250 to 1999 lb, 35.5c. Premium for hydrogen-removed metal, 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 11.4c per lb of alloy, carload packed, 12.15c, ton lots 13.05c, less ton 14.05c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump bulk 24.75c per lb of contained Cr, c.l. packed 25.65c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload, lump, bulk, max. 0.025% C (simplex) 34.50c per lb contained Cr, 0.03% C 36.50c, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot 2.2c, less ton add 3.2c. Delivered. Spot add 0.25c.

Foundry Ferrochrome, High Carbon: (Cr 62-66%, C 5-7%). Contract, c.l. S M x D, bulk 26.25c per lb contained Cr. Packed, c.l. 27.15c, ton 28.50c, less ton 30.25c. Delivered Spot, add 0.25c.

Foundry Ferrochrome, Low Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, S M x D, 18.35c per lb of alloy; ton lot 19.2c, less ton lot 20.4c, delivered, spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 25.75c per lb of contained chromium plus 12.4c per pound of contained silicon; 1" x down, bulk 25.90c per pound of contained chromium plus 12.60c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr 36-39%, Si 26-39%, Al 7-9%, C 0.05% max). 25.75c per lb of contained chrome plus 12.4c per lb of contained silicon plus aluminum 3" x down, delivered.

Chromium Metal: (Min 97% Cr and 1% Fe) contract, 1" x D; packed, max 0.50% carload $1.12, ton lots $1.14, less ton $1.16. Delivered. Spot, add 3c. Prices on 0.10 per cent carbon grade, add 4c to above prices.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, $3.00 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 35-55%, Si 2-3.5% max, C 0.3-1% max), $3.10. **Primos and High Speed Grades** (V 35-55%, Si 1.50% max, C 0.20% max) $3.20.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 7, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump bulk, 12.40c per lb of contained Si, carload packed 14.0c, ton lot 15.15c, less ton 17.1c Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c Delivered. Spot, add 0.5c.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.0c per lb of contained Si, carload packed 18.2c, ton lot 19.15c, less ton 20.2c Delivered. Spot, add 0.25c.

Silicon Metal: (Min 97% Si and 1% max Fe) C.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max. 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.90c per lb of alloy, ton lots packed 11.30c, 20 to 1999 lb 11.65c, smaller lots 12.15c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max). Contract, c.l. lump, bulk 8.0c per lb of alloy, c.l. packed 8.75c, ton lot 9.5c, less ton 10.35c Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 20.25c per lb of alloy, ton lot 21c, less ton 22.25c. Freight allowed Spot add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 7.5c per pound; Grade B (14-18% B) $1.20; Grade C (18% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 4.5c per lb, smaller lots, 5.0c per lb.

Carbortam: (B 1 to 2%) contract, lump, carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y. freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.0c. Deld. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3¾ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 16.25c per lb of briquet, carload packed 16.95c, ton 17.75c, less ton 18.6c. Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 12.45c per lb of briquet, c.l. packaged 13.25c, ton lot 14.05c, less ton 14.95c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 12.65c per lb of briquet, c.l. packaged 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.95c per lb of briquet. Packed c.l. 7.75c, ton lot 8.80c, less ton 9.45c. Delivered. Spot, add 0.25c.
(Small size—Weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 7.1c. Packed c.l. 7.9c, ton lot 8.7c, less ton 9.6c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquetts: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 10,000 lb W or more, $4.35 per lb of contained W; 2000 lb W to 10,000 lb W, $4.45; less than 2000 lb W, $4.57, f.o.b. Niagara Falls, N. Y.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max, C 0.4% max). Contract, ton lot, 2" x D, $6.40 per lb of contained Cb, less ton $6.45. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, $4.75 per lb of contained Cb plus Ta, deld.; less ton lots $4.80.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed 1" x D, 4.5c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.50c per lb of alloy; ton lots 18.50c, less ton lots 20c, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

V-S Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 15c per lb of alloy; ton lots 16.50c, less ton lots 17.75c, f.o.b., Niagara Falls; freight allowed to St. Louis.

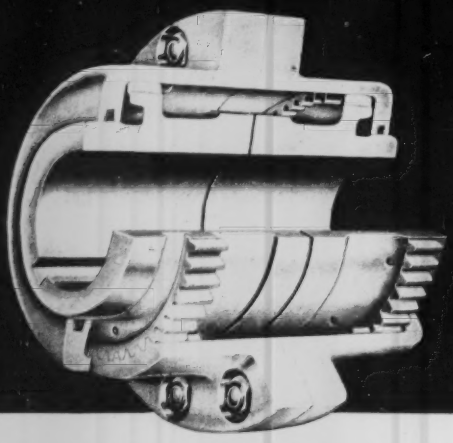
Simanal: (Approx. 20% each Si, Mn, Al; bal. Fe). Lump, carload, bulk 14.50c. Packed c.l. 15.50c, ton lots, 15.75c, less ton lots, 16.25c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base), carloads, f.o.b. sellers' works, Mt. Pleasant, Sigio, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb contained Mo, f.o.b. Langeloth, $1.32 in all sizes except powdered which is $1.41. Washington, Pa., furnace, any quantity $1.32.

Technical Molybdic-Oxide: Per lb. contained Mo, f.o.b. Langeloth, Pa., $1.14 in cans; in bags, $1.13, f.o.b. Langeloth, Pa.; Washington, Pa., $1.13.

POOLE



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If you can tell red from green, and count to ten, the job is easy. That's why Ferro Pickle Pills have been standard equipment in the best pickling rooms, for years. They're efficient, economical, and easy to use.

There's a Ferro Pickle Pill for almost every pickle room need; a simple, sure way of determining the solution percentage of sulphuric acid, muriatic acid, alkali and metal-cleaning tanks . . . or the iron content of any of these solutions. One try will convince you. *Write today for literature and prices!*

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IF METALWORKING PLANTS ARE YOUR PROSPECTS . . .

STEEL can put you in touch with the important ones, those that do more than 92% of the industry's business. Tell the buyers and specifiers in these plants of the machines or materials you have for sale through an "Equipment—Materials" advertisement. For rates write STEEL, Penton Building, Cleveland 13, Ohio.

ORES-COKE-REFRACTORIES

Prices as reported to STEEL; *changes shown in italics.*

ORES

Lake Superior Iron Ore

(Prices effective July 1, 1953, and thereafter, gross ton, 51.50% iron natural, rail or vessel, lower lake ports.)

Old range bessemer	$10.30
Old range nonbessemer	10.15
Mesabi bessemer	10.05
Mesabi nonbessemer	9.90
Open-hearth lump	11.15
High phosphorus	9.90

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect on June 24, 1953, and increases or decreases after such date are for buyer's account.

Eastern Local Iron Ore

Cents per unit deld. E. Pa.

Foundry and basic 56-62% concentrates, contract	17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	nom.
Long-term contract	22.00
North African hematite (spot)	24.00-26.00
Brazilian iron ore, 68-69% (spot)	25.00

Tungsten Ore

Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit	$53.00
Domestic scheelite, mine	63.00

Manganese Ore

Manganese, 48%, nearby, $1.18-1.21 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 90-93c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48%, 2.8:1	$40.00-$42.00
48%, 3:1	41.00-46.00
48%, no ratio	32.00-34.00

South African Transvaal

44%, no ratio	$27.00-28.00
48%, no ratio	34.00-35.00

Brazilian

44%, 2.5:1 lump	nom. $32

Domestic

(Rail nearest seller)

48%, 3:1	$39.00

Molybdenum

Sulphide concentrates, per lb. molybdenum content, mines	$1.00

REFRACTORIES

Fire Clay Brick

High-Heat-Duty: Pueblo, Colo., $89.00; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., Woodbridge, N. J., $109.00; Salina, Pa., $114.00; Niles, O., $120; Los Angeles, Pittsburg, Calif., $132.50.

Silica Brick

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., $115; Warren, O., Hays, Pa., $120; Niles, O., $123; E. Chicago, Ind., Joliet, Rockdale, Ill., $125; Cutler, Utah, $116.55; Los Angeles, $122.85.

Insulating Fire Brick

2300° F.: Massillon, O., $178.50; Clearfield, Pa., $213; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $209; Vandalia, Mo., $214.10; Portsmouth, O., $207.50; Bessemer, Ala., $212.80.

Ladle Brick

Dry Pressed: Bessemer, Ala., $64.60; Aisey Hill, Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrit Station, Pa., Wellsville, O., $77.50; Mexico, Mo., $73.50; Clearfield, Pa., Portsmouth, O., $83; Perla, Ark., $100.00; Los Angeles, $110.25; Pittsburgh, Calif., $111.30.

Sleeves

Reesdale, Pa., $139.70; Johnstown, Pa., $140.00; Clearfield, Pa., $148.50; St. Louis, $151.80; Athens, Tex., $155.00.

Nozzles

Reesdale, Pa., $223.50; Johnstown, Pa., $228.20; Clearfield, Pa., $241.40; St. Louis, $247.10; Athens, Tex., $247.70.

Runners

Reesdale, Pa., $171.00; Johnstown, Pa., $177.80; Clearfield, Pa., $185.50; St. Louis, $187.30; Athens, Tex., $191.80.

High-Alumina Brick

50 Per Cent: Clearfield, Pa., St. Louis, Mexico, Mo., $179.00; Danville, Ill., $189.30.

60 Per Cent: St. Louis, Mexico, Vandalia, Mo., $223.00; Danville, Ill., $215.20.

70 Per Cent: St. Louis, Mexico, Vandalia, Mo., $253; Danville, Ill., $258; Clearfield, Pa., $252.

Dolomite

Domestic, dead-burned bulk: Billmeyer, Blue Bell, Williams, Plymouth Meeting, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Narlo, Gibsonburg, Woodville, O., $14.50; Thornton, McCook, Ill., $14.60; Dolly Siding, Bonne Terre, Mo., $13.65.

Magnesite

Domestic, deadburned bulk; Luning, Nev., $38.

METALLURGICAL COKE

Price per net ton

Beehive Ovens

Connellsville, furnace	$14.50-15.00
Connellsville, foundry	16.50-17.00
New River, foundry	20.50
Wise county, foundry	15.95
Wise county, furnace	15.20

Oven Foundry Coke

Kearney, N. J., ovens	$24.00
Everett, Mass., ovens	
New England, del.	26.00
Chicago, ovens	24.50
Chicago, del.	26.00
Terre Haute, ovens	24.05
Milwaukee, ovens	25.25
Indianapolis, ovens	24.25
Chicago, del.	28.12
Cincinnati, del.	28.85
Painesville, O., ovens	25.50
Cleveland, del.	27.43
Erie, Pa., ovens	24.00
Birmingham, ovens	24.65
Cincinnati, del.	26.58
Lone Star, Tex., ovens	18.50
Philadelphia, ovens	23.95
Swedeland, Pa., ovens	23.85
St. Louis, ovens	
St. Louis, del.	26.00
St. Paul, ovens	24.75
Portsmouth, O., ovens	24.00
Cincinnati, del.	26.62
Detroit, ovens	25.50
Detroit, del.	26.50
Buffalo, del.	28.08
Flint, del.	28.24
Pontiac, del.	27.96
Saginaw, del.	28.58

Or within $4.55 freight zone from works.

COAL CHEMICALS

Spot, cents per gallon, ovens

Pure benzol	36.00
Toluol, one deg.	30.00-33.00
Industrial xylol	30.00-33.50

Per ton, bulk, ovens

Sulphate of ammonia	$14.45
Birmingham area	$19.50

Cents per pound, ovens

Phenol, 90 c.l., nonreturnable drums	17.25

FLUORSPAR

Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF$_2$ content 72.5%, $41; 70%, $42.50; 60%, $38.

Imported, net ton, duty paid, metallurgical grade, $35-$36.

ELECTRODES

(Threaded, with nipple, unboxed f.o.b. plant)

GRAPHITE

Diam. Inches	Length	Cents per lb.
2	24	$13.50
2½	30	28.00
3	40	27.25
4	40	26.00
4½	40	25.75
6	60	23.25
7 & 8	60	21.00
12 & 14	72	20.50
16	72	20.00
17	60	20.50
18	72	20.50
20	72	20.00

CARBON

10	100	$8.95
10, 35, 30	110	8.95
30	84	9.10
24	96	8.90
24	72-84	9.10
20	90	8.95
20	84	9.10
17	72	9.10
17	60	9.50
14	72	9.50
14, 12 to 8	60	10.30
8	60	10.55

Metallurgical Coke . . .

(Concluded from Page 161)

700 tons in the like period of last year.

Beehive coke output in the month was 418,799 net tons, boosting the cumulative total for the year to date to 3,420,613 net tons against 2,748,700 in the comparable 1952 period.

Total production of oven and beehive coke in the calendar year to the end of July was 46,467,012 net tons, comparing with 36,570,400 in the similar period last year.

At the end of July oven coke stocks were 2,220,692 net tons, gain of 4.3 per cent from the preceding month and equal to 10.9 days production the Bureau reports.

Iron Ore . . .

Iron Ore Prices, Page 169

Cleveland Lake shippers continue to move iron ore from the head of the lakes at a rate in excess of 3 million tons weekly. With 10 weeks of the 1953 lake shipping season remaining they are confident the season shipment goal of 100 million tons will be achieved even though weather conditions from here on, and early laying up of some vessels may push

The world's best . . . one-piece, drop forged—not welded—of mild carbon steel, heat-treated, with head accurately milled for standard tables on lathes, planers, boring mills, milling machines. Integral washer and nut. Sizes: up to 30". Typical direct prices for 10" lengths: ½—$1.36; ⅝—$1.36; ¾—$1.58; ⅞—$1.89. Write for price list.

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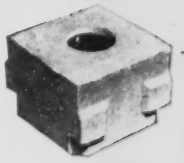

Sales Office
132 S. Whitfield St.
PITTSBURGH 6, PA. EM: 2-0614

weekly shipments below the 3 million ton mark.

As of Sept. 26 the cumulative ore movement totals 77,942,849 gross tons, only 22,057,150 tons short of the goal for the entire season. In the latest week shipments totaled 3,077,143 tons, off somewhat from the 3,364,944 tons moved in the corresponding week of 1952 when shippers were pushing the fleet to the limit in an effort to make up for tonnage lost during the summer steel strike.

Inland Steel Co. has awarded a contract to Construction Aggregates Corp., Chicago, for dredging in development of Inland's iron ore mine at Steep Rock, Ont. The contract involves draining water from a lake as well as removal of overburden.

Inland hopes to get production at the mine under way in 1960 and is looking forward to an annual output of 3 million tons of high grade ore.

Scrap . . .

Scrap Prices, Page 172

Chicago — Purchase by a leading steelmaker here of its October scrap requirements staggered a tottering market. Result was that open-hearth grades were $8 a ton off from this user's acquisition the previous month and electric furnace grade $10.

These new prices were $6 and about $8 or $9, respectively, below what was considered the market level in the absence of mill purchases. Tonnage involved in the October mill buy is believed to be larger than that of a month ago but still not big tonnage.

Cast grades and railroad items also are caught in the downtrend.

New York—Sharp drop in prices in eastern Pennsylvania and elsewhere has created general confusion here among scrap brokers. Some are out of the market entirely pending stabilization. Others have reduced their prices on a more or less nominal basis.

Tentatively No. 1 heavy melting steel and No. 1 bundles are $24 to $25, with some brokers offering $21 to $23 on No. 2 heavy melting and $19 to $20 on No. 2 bundles.

Demand for 18-8, 430 and 410 stainless scrap sheets, clips and solids is lagging, with prices on all three grades off about $10 per gross ton from a month ago. Stainless 18-8 is now holding at $160 to $165 per gross ton, with brokers offering $80 to $85 for the 430 material and $70 to $75 for the 410 scrap.

Business in borings and turnings is lagging in particular. A little tonnage in 18-8 is being bought by brokers for shipment west at around $90, but borings and turnings in the straight chromium grades are moving too slowly for a true test of the market.

Boston—In some cases the lower price on cast iron results in a heavier ratio of scrap to pig iron in foundry melts. Most grades of cast, including No. 1 cupola and mixed cupola cast, now are quoted less than half the pig iron price delivered. Weakness continues in steel grades with new buying slow. Chemical borings have weakened.

Buffalo—Slumping tendencies carried scrap prices an additional $3 to $4 per ton lower. Three mill consumers are out of the market. Two of them extended an embargo on shipments. Gloom prevails among dealers. Prices on cast scrap are unchanged in view of recent sales at reduced levels. Dealers' yard stocks are building up.

Philadelphia—Purchases of No. 2 heavy melting steel and No. 2 bundles by the Fairless, Pa., consumer at $27 and $25, delivered, respectively, have resulted in sharp downward revisions generally in open-hearth steel scrap.

Contributing to the confusion has

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been limited shipments by truck of No. 1 heavy melting steel and No. 2 heavy melting at $33 and $30, delivered, respectively, to a nearby mill. Indications point that prices on scrap to this consumer will soon reflect in some degree at least the lower prices done at Fairless.

As the prices at the Fairless Works have contributed to a drop of $11 to $12 in this district over the past two months, the trade generally believes that current weakness has about run its course. Some believe that actually there will be a sharp rebound soon.

No. 1 heavy melting steel, No. 1 bundles and No. 1 busheling are now holding tentatively at $30 to $31 delivered, No. 2 heavy melting at $27 and No. 2 bundles at $25.

Cast grades are relatively steady, although unstripped motor blocks are off $1 to $28 delivered, and dropend machinery off $2 to $10 to $41.

Pittsburgh—Sharp declines in scrap prices occurred last week in a depressed market, with some grades dropping $7 a ton. Mills continue to stay out of the market, and dealers are making offerings well below prices quoted one week earlier.

No. 1 heavy melting dropped $5 to $34 to $35, and No. 2 heavy melting fell $7 to $28 to $29. Turnings and borings fell from $3 to $6. Scrap men agree that prices could rise if concentrated buying took place. Current orders are for small amounts only.

Cleveland—Prices on steelmaking scrap are off another $2 to $7 per ton, largely reflecting sharp declines at other consuming points since buying in this immediate district continues at a standstill.

In the absence of sales, quoted prices are nominal with No. 1 heavy melting $30 to $31, off $2 from a week ago, and No. 2 heavy melting $22 to $23, off $7 from last week. Foundry and railroad grades also are quoted nominally lower.

While market sentiment in general is bearish with sales absent and material piling up in dealers' yards, still an undercurrent of renewed optimism is developing in some areas of the market. Continuance of steelmaking operations on a high level and the belief the mills will shortly have to cover for winter inventory are contributing factors for buoyancy.

Dealers and brokers think No. 2 heavy melting steel is currently quoted at an unrealistically low level and are of the opinion the price would jump $4 to $5 per ton on a representative mill purchase.

Detroit—Scrap prices continued to drop last week. Volume was sufficiently high to give indicative prices

(*Please Turn to Page 174*)

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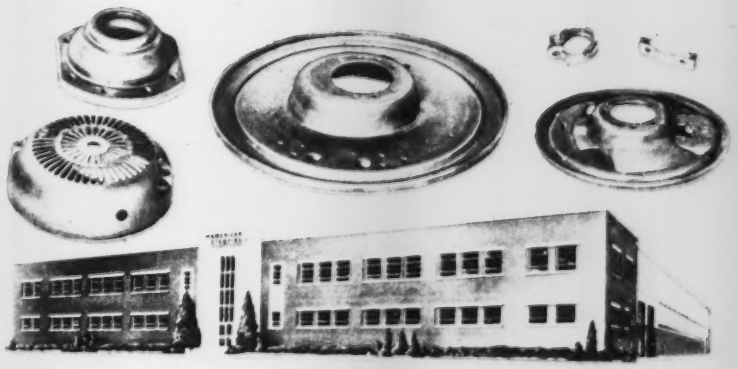

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IRON AND STEEL SCRAP

Consumer prices, per gross ton, except as otherwise noted, including broker's commissions, as reported to STEEL. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Oct. 1	$31.50
Sept. 24	36.50
Sept. avg.	36.93
Oct. 1952	43.00
Oct. 1948	43.25

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer plant)

No. 1 heavy melting	$44.00-45.00
No. 2 heavy melting	28.00-29.00
No. 1 bundles	45.00-46.00
No. 2 bundles	26.00-27.00
No. 1 bushelling	45.00-46.00
Machine shop turnings	20.00-21.00
Mixed borings, turnings	20.00-21.00
Short shovel turnings	24.00-25.00
Cast iron borings	25.00-24.00
Cut structurals	58.00-59.00
Heavy turnings	29.00-30.00
Punchings & plate scrap	58.00-59.00
Electric furnace bundles	58.00-59.00

Cast Iron Grades

No. 1 cupola	39.00-40.00
Charging box cast	38.00-39.00
Heavy breakable cast	36.00-37.00
Unstripped motor blocks	33.00-34.00
No. 1 machinery cast	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt.	46.00-47.00
Rails, 2 ft and under	51.00-52.00
Rails, 18 in. and under	52.00-53.00
Rails, random lengths	45.00-46.00
Railroad specialties	48.50-46.50

CLEVELAND

(Delivered consumer plant)

No. 1 heavy melting	50.00-51.00
No. 2 heavy melting	22.00-23.00
No. 1 bundles	51.00-52.00
No. 2 bundles	21.00-22.00
No. 1 bushelling	50.00-51.00
Machine shop turnings	16.00-17.00
Mixed borings, turnings	21.00-22.00
Short shovel turnings	21.00-22.00
Cast iron borings	21.00-22.00
Low phos.	51.00-52.00
Alloy free, short shovel turnings	24.00-25.00
Electric furnace bundles	52.00-53.00

Cast Iron Grades

No. 1 cupola	39.00-40.00
Charging box cast	28.00-29.00
Stove plate	36.00-37.00
Heavy breakable cast	26.00-27.00
Unstripped motor blocks	22.00-23.00
Brake shoes	28.00-29.00
Clean auto cast	39.00-40.00
No. 1 wheels	50.00-51.00
Burnt cast	29.00-30.00
Drop broken machinery	43.00-44.00

Railroad Scrap

No. 1 R.R. heavy melt.	45.00-46.00
R.R. malleable	45.00-46.00
Rails, 2 ft and under	49.00-50.00
Rails, 18 in. and under	50.00-51.00
Rails, random lengths	42.00-43.00
Cast steel	43.00-44.00
Railroad specialties	49.00-50.00
Unit tires	49.00-50.00
Angles, splice bars	48.00-46.00
Rails, rerolling	49.00-50.00

Stainless Steel

(F.o.b. shipping point)

18-8 bundles, solids	nom. 160.00-170.00
18-8 turnings	nom. 70.00-80.00
430 clips, bundles, solids	nom. 70.00
430 turnings	nom. 50.00

YOUNGSTOWN

(Delivered consumer plant)

No. 1 heavy melting	$44.00-45.00
No. 2 heavy melting	27.00-28.00
No. 1 bundles	44.00-45.00
No. 2 bundles	25.00-26.00
Machine shop turnings	16.00-17.00
Short shovel turnings	24.00-25.00
Cast iron borings	24.00-25.00
Low phos.	45.00-46.00
Electric furnace bundles	45.00-46.00

Railroad Scrap

No. 1 R.R. heavy melt.	46.00-47.00

PHILADELPHIA

(Delivered consumer plant)

No. 1 heavy melting	50.00-51.00
No. 2 heavy melting	27.00
No. 1 bundles	50.00-51.00
No. 2 bundles	25.00
No. 1 bushelling	50.00-51.00
Electric furnace bundles	52.00-53.00
Machine shop turnings	19.00-21.00
Mixed borings, turnings	22.00-23.00
Short shovel turnings	24.00-25.00
Structurals & plate	56.00-57.00
Heavy turnings	30.00
Couplers, springs, wheels	41.00-42.00
Rail crops, 2 ft & under	44.00-45.00

Cast Iron Grades

No. 1 cupola	35.00-36.00
Charging box cast	nom.
Heavy breakable cast	37.00
Unstripped motor blocks	28.00
Drop broken machinery	40.00-41.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	24.00-25.00
No. 2 heavy melting	21.00-23.00
No. 1 bundles	24.00-25.00
No. 2 bundles	19.00-20.00
Machine shop turnings	12.50-13.50
Mixed, borings, short turnings	15.50-16.50
Low phos. (structural & plate)	27.00-29.00
Short shovel turnings	16.00-17.00

Cast Iron Grades

No. 1 cupola	30.00-31.00
Unstripped motor blocks	21.00-22.00

Stainless Steel

18-8 sheets, clips, solids	160.00-165.00
18-8 borings, turnings	70.00
430 sheets, clips, solids	80.00-85.00
410 sheets, clips, solids	70.00-75.00

BOSTON

(Brokers' buying prices, f.o.b. shipping point)

No. 1 heavy melting	24.00-25.00
No. 2 heavy melting	20.00-21.00
No. 1 bundles	24.00-25.00
No. 2 bundles	18.00-19.00
Machine shop turnings	10.50-11.00
Mixed borings, turnings	15.50-16.00
Short shovel turnings	16.00-16.50
No. 1 cast	29.00-30.00
Mixed cupola cast	27.00-28.00
No. 1 machinery cast	36.00-37.00

CINCINNATI

(Brokers' buying prices)

No. 1 heavy melting	28.00-29.00
No. 2 heavy melting	25.00-26.00
No. 1 bundles	28.00-29.00
No. 2 bundles	22.00-23.00
No. 1 bushelling	28.00-29.00
Machine shop turnings	12.00-13.00*
Mixed borings, turnings	15.00-16.00*
Short shovel turnings	15.00-16.00*
Cast iron borings	15.00-16.00*

Cast Iron Grades

No. 1 cupola	43.00
Charging box cast	36.00
Heavy breakable cast	36.00
Drop broken machinery	47.00

Railroad Scrap

No. 1 R.R. heavy melt.	48.00-44.00
Malleable	45.00-46.00
Rails, 18 in. and under	48.00-49.00
Rails, random lengths	39.00-40.00

*F.o.b. shipping point

CHICAGO

No. 1 heavy melting	29.00-30.00
No. 2 heavy melting	24.00-25.00
No. 1 factory bundles	30.00-31.00
No. 1 dealer bundles	24.00-25.00
No. 2 bundles	22.00-23.00
No. 1 bushelling	29.00-30.00
Machine shop turnings	14.00-15.00
Mixed borings, turnings	14.00-15.00
Short shovel turnings	16.00-17.00
Cast iron borings	16.00-17.00
Cut structurals, 3 ft	52.00-53.00
Punchings & plate scrap	52.00-53.00
Electric furnace bundles	52.00-53.00

Cast Iron Grades

No. 1 cupola	42.00-43.00
Stove plate	26.00-27.00
Unstripped motor blocks	14.00-20.00
Clean auto cast	36.00-37.00
Drop broken machinery	36.00-37.00

Railroad Scrap

No. 1 R.R. heavy melt.	40.00-41.00
R.R. Malleable	40.00-41.00
Rails, 2 ft. and under	45.00-45.00
Rails, 18 in. and under	44.00-46.00
Angles, splice bars	40.00-42.00
Rails, rerolling	48.00-50.00

DETROIT

No. 1 heavy melting	26.00
No. 2 heavy melting	23.00
No. 1 bundles	26.00
No. 2 bundles	23.00
No. 1 bushelling	26.00
Machine shop turnings	12.00
Mixed borings, turnings	12.00
Short shovel turnings	14.00
Punchings & plate scrap	30.00

Cast Iron Grades

No. 1 cupola	40.00
Charging box cast	38.00
Stove plate	34.00-35.00
Heavy breakable	29.00-30.00
Unstripped motor blocks	30.00
Clean auto cast	40.00
Malleable	40.00

BIRMINGHAM

No. 1 heavy melting	26.00-26.50
No. 2 heavy melting	24.00-24.50
No. 1 bundles	26.00-26.50
No. 2 bundles	22.00-22.50
Machine shop turnings	19.50-20.50
Short shovel turnings	21.50-22.50
Cast iron borings	17.00-17.50
Cut structurals	nom.
Electric furnace bundles	nom.

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	41.00-42.50
Charging box cast	30.00-31.00
Stove plate	38.00-39.00
Bar crops and plate	38.00-39.00
Cut structurals	36.00-37.00
Heavy breakable cast	30.00-31.00
Unstripped motor blocks	34.00-35.00
No. 1 wheels	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt.	nom.
Rails, 2-ft and under	42.00-43.00
Rails, random lengths	39.00-40.00
Angles, splice bars	45.00-46.00
Rails, rerolling	46.00-47.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	31.00-32.00
No. 2 heavy melting	27.00-28.00
No. 1 bundles	30.00-31.00
No. 2 bundles	22.00-23.00
Machine shop turnings	14.00-16.00
Short shovel turnings	14.00-16.00

Cast Iron Grades

No. 1 cupola	38.00-39.00
Charging box cast	28.00-29.00
Heavy breakable cast	28.00-29.00
Unstripped motor blocks	28.00-29.00
Brake shoes	37.00-38.00
Clean auto cast	38.00-40.00
Burnt cast	29.00-30.00

Railroad Scrap

Malleable	38.00-40.00
Rails, 18 in. and under	45.00-47.00
Rails, random lengths	38.00-37.00
Unit tires	36.00-37.00
Angles, splice bars	40.00-41.00
Rails, rerolling	42.00-43.00

BUFFALO

No. 1 heavy melting	$35.00-36.00
No. 2 heavy melting	28.00-29.00
No. 1 bundles	35.00-36.00
No. 2 bundles	26.00-27.00
No. 1 bushelling	36.00-40.00
Machine shop turnings	19.00-20.00
Mixed borings, turnings	20.00-21.00
Short shovel turnings	20.50-24.50
Cast iron borings	20.00-21.00
Low phos.	42.00-43.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	32.50-33.50
No. 1 machinery	37.50-38.00

Railroad Scrap

Rails, random lengths	41.00-42.00
Rails, 2 ft and under	47.00-48.00
Railroad specialties	47.00-47.50

SEATTLE

(Delivered consumer plant)

No. 1 heavy melting	31.00-32.00
No. 2 heavy melting	29.00-31.00
No. 1 bundles	28.00
No. 2 bundles	23.00
No. 3 bundles	19.00
Machine shop turnings	13.00
Mixed borings, turnings	13.00
Short shovel turnings	13.00
Electric furnace, No. 1	38.00-40.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	30.00-32.00
Heavy breakable cast	25.00-30.00
Unstripped motor blocks	27.00
No. 1 wheels	38.00-40.00
Stove plate	26.00

Railroad Scrap

Rails, random lengths	34.00-35.00

SAN FRANCISCO

No. 1 heavy melting	27.00
No. 2 heavy melting	23.00
No. 1 bundles	24.00
No. 2 bundles	21.00
No. 1 bushelling	27.00
Machine shop turnings	9.00
Mixed borings, turnings	9.00
Short shovel turnings	13.00
Cast iron borings	13.00
Cut structurals	32.00
Heavy turnings	13.00
Punchings & plate scrap	33.00
Electric furnace bundles	24.00

Cast Iron Grades

No. 1 cupola	39.00
Charging box cast	35.00
Stove plate	37.00
Heavy breakable cast	36.00
Unstripped motor blocks	29.00
Brake shoes	35.00
Clean auto cast	39.00
No. 1 wheels	39.00
Burnt cast	23.00
Drop broken machinery	43.00

LOS ANGELES

No. 1 heavy melting	24.00
No. 2 heavy melting	20.00
No. 1 bundles	23.00
No. 2 bundles	20.00
Machine shop turnings	8.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	37.00-40.00

HAMILTON, ONT.

(Delivered prices)

Heavy melting	$32.50
No. 1 bundles	32.50
No. 2 bundles	32.50
Mechanical bundles	28.50
Mixed steel scrap	28.50
Mixed borings, turnings	26.50
Rails, remelting	32.50
Rails, rerolling	41.50
Bushelling	26.50
Bushelling new factory	
Prep'd	30.50
Unprep'd	28.50
Short steel turnings	22.50

Cast Iron Grades

No. 1 machinery cast	46.00-50.00

F.o.b. shipping point

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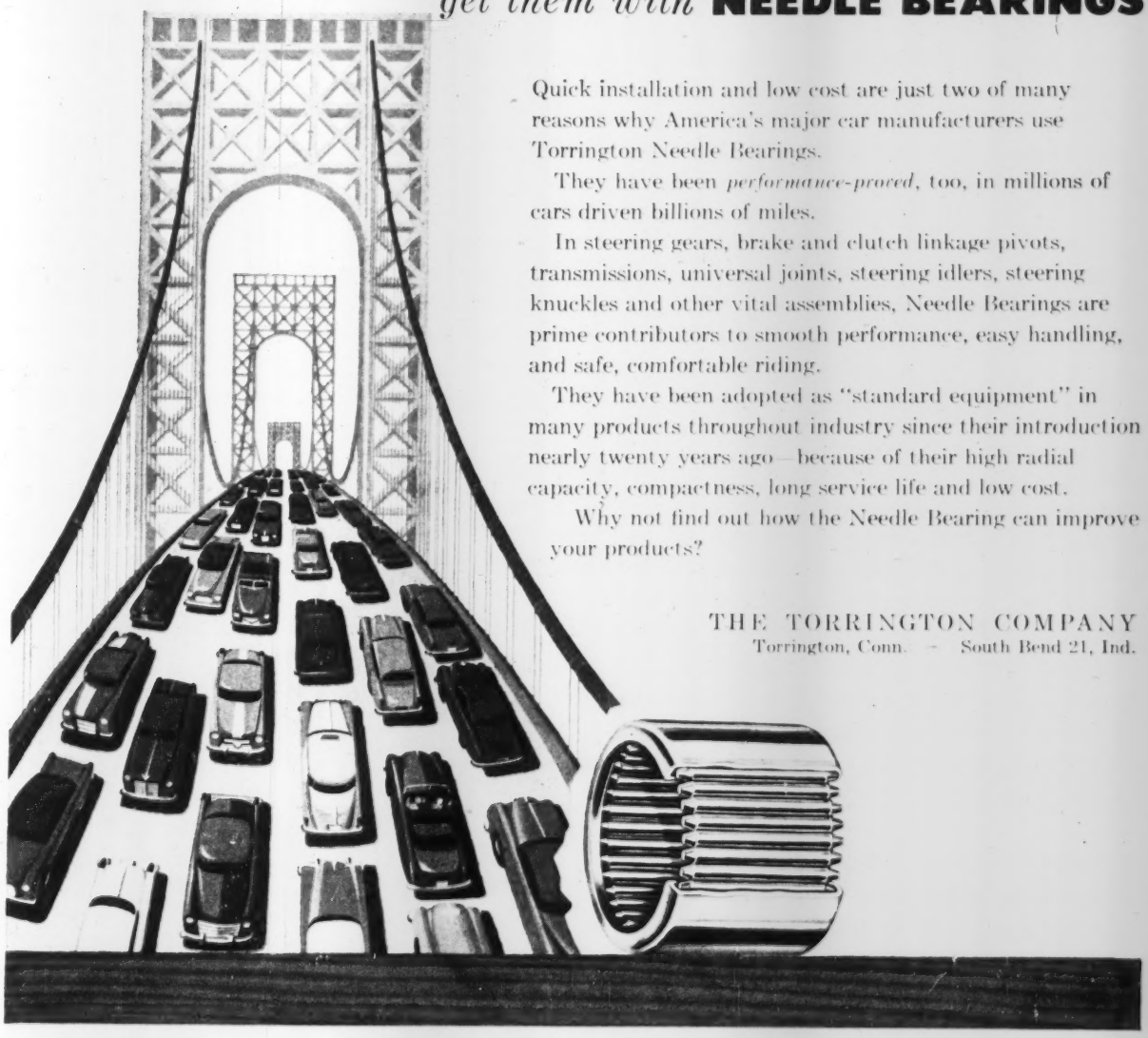

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Scrap . . .

(*Concluded from Page 171*)

for most grades, supplanting nominal prices prevailing the past few weeks. Observers see a possible leveling in the market for a short period.

Youngstown—So little scrap trading is reported, it is difficult to determine representative market prices. Small quantities of No. 2 heavy melting and No. 2 bundles were sold at $28 and $26 respectively.

Cincinnati—Scrap prices continue to sag. Only the cast iron grades are firm. All other prices have dropped to nominal levels.

St. Louis—District scrap prices took a $1 to $3 per ton drop in response to markdowns in Chicago and Valley markets.

Another depressant was an outside mill that bought 70 cars of melting steel in this district at $5.50 under last month's market.

Birmingham—There is no activity in the scrap market here. Buying is at low ebb with hardly enough tonnage moving to peg prices at any stable level.

Los Angeles—Mill buying of scrap is subdued. Mills are buying cheaper grades and are completely out of the market on specialty grades.

San Francisco—Although cast scrap consumption dropped sharply here when a strike closed the big U. S. Pipe & Foundry Co. plant on San Francisco bay, posted prices hold.

Seattle—The largest scrap buyers in this area appear to have filled their current requirements.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

3000 tons, hangars, Mountain Home, Idaho, air base, to unstated interest; general contract to Campbell Construction & Engineering Co., San Francisco.

1100 tons, 224 trash racks and other equipment, Chief Joseph Dam, to Western Steel Mfg. Co., Boise, Idaho.

435 tons, section of Midtown Expressway, for Triboro Bridge & Tunnel Authority, Queens, N. Y., through Gulf Contracting Co., to Harris Structural Steel Co., that city.

360 tons, construction at Hanford Works, to Bethlehem Pacific Coast Steel Corp., Seattle. Sound Construction & Engineering Co., Seattle, general contractor.

330 tons, Washington State Whatcom county bridge, to Poole, McGonigle & Dick, Portland, Oreg.; A. V. Phillips, Seattle, general contractor.

STRUCTURAL STEEL PENDING

1750 tons, coal handling unit, for Board of Transportation power plant, 74th street, New York; National Structures, Long Island City, N. Y., low on general contract.

1300 tons, Phelps Memorial Hospital, Mt. Pleasant, N. Y.; bids Oct. 6.

1250 tons, approximately, state thruway, Monroe county, New York; bids Oct. 15.

1000 tons, bridge work, state thruway, Westchester county, New York; bids Oct. 1.

600 tons, section of state expressway, Bronx, N. Y.; bids Oct. 1.

510 tons, state bridge, Bergen county, New Jersey; bids Oct. 13; also 147 tons of reinforcing bars.

500 tons, Prospect Park connection, Triboro Bridge & Tunnel Authority, Brooklyn, N. Y.; Bachrus Contracting Co., that city, low bidder.

472 tons, state bridge work, Philadelphia; bids Oct. 23; also 2088 tons of reinforcing.

400 tons, estimated, state office building, Harrisburg, Pa.; bids Nov. 5; structure will be 25 stories high, principally of reinforced concrete.

375 tons, four-span composite beam bridge, Farmington river, Farmington, Conn.; bids Oct. 5, Hartford, Conn.; also 80 tons, concrete reinforcing bars.

235 tons, warehouse and office building, General Electric Supply Co., Philadelphia; Baton Construction Co., that city, low on general contract.

225 tons, miscellaneous buildings, Camp Detrick, Maryland; bids Oct. 6.

200 tons, conveyor housings, National Carbide Co., Calvert City, Ky.; bids closed.

177 tons, high school, Anchorage, Alaska; general contract to Patti-MacDonald Co., Seattle.

100 tons, two-span composite beam bridge, Pawcatuck river, Westerly, R. I.-Stonington, Conn.; bids Oct. 5, Hartford, Conn.

REINFORCING BARS . . .

REINFORCING BARS PLACED

750 tons, apartment, 21st St. and Walnut St., Philadelphia, through S. Yellin & Son, general contractors, to American Steel Engineering Co., that city.

500 tons, high school, Lansdale, Pa., through Wark Co., general contractor, to American Steel Engineering Co., Philadelphia.

350 tons, garage, Philadelphia Gas Works, Philadelphia, through J. A. Robins, general contractor, to American Steel Engineering Co., that city.

250 tons, warehouse, Claymont, Del., through R. M. Shoemaker, general contractor, to American Steel Engineering Co., Philadelphia.

250 tons, dormitory, Villanova College, Villanova, Pa., through Joseph R. Farrell, general contractor, to Concrete Steel Co., Philadelphia.

220 tons, infirmary building, state hospital, Danvers, Mass., to Truscon steel Division, Republic Steel Corp., Boston; Joseph Rugo Inc., Boston, general contractor; fabricated structural steel to Grossier & Shlager Iron Works, Sommerville, Mass.

220 tons, addition to Washington state Medical Lake Hospital, to Bethlehem Pacific Coast Steel Corp., Seattle.

185 tons, construction of laterals, Columbia Basin project, Washington state, to Bethlehem Pacific Coast Steel Corp., Seattle.

REINFORCING BARS PENDING

2088 tons, state bridge work, Philadelphia; bids Oct. 23; also 472 tons of structurals.

1500 tons, addition to Everett, Wash. plant for Scott Paper Co.; delivery 1954.

615 tons, highways and bridges, Mercer and Kanawha counties, West Virginia turnpike; bids Oct. 6, Charleston, W. Va.

235 tons, Washington state highway bridges: General awards: Pacific county, to Hamilton Builders, Olympia, $91,096; Lewis county, T. T. Burnham Co., Seattle, $54,600; Franklin county, Sather & Son, Yardley, $58,098.

230 tons, Garden state parkway, Contract No. 13, section 13, Cape May county, New Jersey; bids Oct. 15.

225 tons, Washington state Union Slough bridge; rebids called at Olympia, Oct. 6.

147 tons, state bridge, Bergen county, New Jersey; bids Oct. 13; also 510 tons of structural steel.

103 tons, Garden state parkway, contract No. 29, section 11, Cape May county, New Jersey; bids Oct. 13.

101 tons, Golden state parkway, contract No. 12, section 11, Cape May county, New Jersey; bids Oct. 15.

PLATES . . .

PLATES PLACED

1750 tons, Navy oil storage tanks, Manchester, Wash., to Hammond Iron Works, Provo, Utah; Odegard Construction Co., Everett, Wash., general contractor.

1080 tons, oil storage tanks, Elelson air field, Alaska, to Pittsburgh-DesMoines Steel Co., Pittsburgh; Morrison-Knudsen Co., Seattle, general contractor.

400 tons, Mountain Home base, Idaho, storage tanks, reported placed with Hammond Iron Works, Provo, Utah.

300 tons, 500 cargo containers for Alaska S. S. Co., to Flohr & Co., Seattle.

100 tons, elevated water storage tank, Clovis Air Field base, Corps of Engineers, Albuquerque, N. Mex., to Chicago Bridge & Iron Co., Chicago.

PLATES PENDING

300 tons, for Boeing airplane plant, Seattle, Flohr & Co., Seattle, low $280,567.

PIPE . . .

CAST IRON PIPE PLACED

750 tons, 6, 8 and 12 inch cast iron pipe for inventory, to Hugh G. Purcell, Seattle, by Portland, Oreg.

RAILS, CARS . . .

LOCOMOTIVES PLACED

National of Mexico, twenty 1600-hp diesel engines, to Baldwin-Lima-Hamilton Corp., Eddystone, Pa.

Northern Pacific, 30 diesel units to the Electro-Motive Division, General Motors Corp., LaGrange, Ill., and the American Locomotive-General Electric Companies, Schenectady, N. Y. Electro-Motive will build ten 1500-hp road switchers, two 4-unit 6000-hp road freight locomotives and one 3-unit 4500-hp passenger locomotive. American Locomotive-General Electric will build four 1600-hp road switchers and five 1000-hp road switchers.

RAILROAD CARS PLACED

Baltimore & Ohio, 12 cabooses, to own shops.

New York, New Haven & Hartford, 100 flat cars to its Readville, Mass., shops.

Monon, 150 fifty-ton hopper cars and thirty 3000-cu ft covered hopper cars, to Pullman-Standard Car Mfg. Co., Chicago.

10 to 12 ft. lengths
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Also Screw Machine Products to Order
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Machine Screw Corp.
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Completely Rebuilt by Factory in 1949 — Used only 10 days since.
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Hoppers, Twin, All-Steel, 50-Ton, Cross Dump
Ore Hoppers, All-Steel, 50-Ton, Heavy Duty
Tank, 3,000-Gallon, High Pressure
Tank, 8,000-Gallon, Coiled and Non-Coiled

Hoppers, All Steel, 70-ton, Triple Hopper Cross Dump

EXTRA LONG FLAT CARS

40 & 50-Ton Capacity, Length 70' and 74'

CABOOSE CARS

Eight Wheel, Cupola Type

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Side Dump, 20-Yd., 40-Ton, Lift Door
End Dump, 20-Yd., 50-Ton, Drop Door
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Representatives Wanted

AGENTS WANTED

To sell European steel and iron on commission basis for largest steel combine in Europe. Territories open throughout the United States. Contact New York office. Carl Spaeder, G m b H., 79 Wall Street, New York 5, New York.

WANTED

Agent, on a commission basis, to represent nationally known manufacturer of seamless and welded steel tubing and tubular parts in the following trade areas: Minneapolis-St. Paul; Omaha; Louisville; Richmond, Virginia; Charlotte, North Carolina; Greenville, South Carolina; Denver; Salt Lake City. Opportunities in some areas for increased territory depending on progress. State age, education, present business connection, and military status. Information confidential. Apply Box 823, STEEL, Penton Bldg., Cleveland 13, Ohio.

Help Wanted

WANTED

Forging Die Designer for small Commercial Forge Shop in Western Pennsylvania. Reply stating experience and qualifications to Box 825, STEEL, Penton Bldg., Cleveland 13, Ohio.

ASSISTANT CHIEF ENGINEER

Must have experience in general steel plant maintenance and construction. Eastern location. Give full details as to training, experience, age and salary expected. Reply Box 816, STEEL, Penton Building, Cleveland 13, Ohio.

WANTED

Die Sinker capable of supervising Tool Room in small Commercial Forge Shop in Western Pennsylvania. Reply giving experience and qualifications to Box 824, STEEL, Penton Bldg., Cleveland 13, Ohio.

Positions Wanted

STEEL TUBING

Thirteen years varied experience in steel tubing principally sales. Also valuable government experience. Thorough knowledge of tubing industry, seamless and welded, all grades. College major in marketing, advertising and selling. Age 37. Salary open. Will relocate. Reply Box 826, STEEL, Penton Bldg., Cleveland 13, Ohio.

Positions Wanted

PLANT MANAGER with 25 years' experience in Costs, Production and Management functions. M.I.T. graduate. Write Box 804, STEEL, Penton Bldg., Cleveland 13, Ohio.

METALLURGIST

Production, Sales, Research. Age 42; 20 years' experience in manufacture and fabrication of stainless and alloy steels. Outstanding record of achievement. Proven administrator and technical writer. Desires responsible and challenging position. Reply Box 827, STEEL, Penton Bldg., Cleveland 13, Ohio.

MANUFACTURING EXECUTIVE

Available after January first. Broad background in metal products. Sheet metal to very heavy steel, machinery, code vessels, etc. Capable administrator. Extensive organizational experience all phases of plant operation. Permanent proposition with medium sized company only. Age 49. College and vast practical experience. Minimum $12,000. Full details to detailed inquiries. Reply Box 828, STEEL, Penton Bldg., Cleveland 13, Ohio.

WANTED

All types of steel, steel products, plumbing supplies, brass goods, etc., for distribution to dealers in the Miami area.

Write Harry Markowitz, Inc.
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Convert your used transformers to cash! Send us a description of them TODAY.
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TRANSFORMERS BOUGHT, SOLD AND REPAIRED
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Chief engineer for structural and miscellaneous fabricating plant. Employment, 175. Location Southern City of 300,000. Absolutely must be expert at organizing and supervisory detailing and estimating. Must know every phase of fabricating operations. If you are mediocre please do not apply. Owners desire to eventually turn over operations to top executives. Outstanding opportunity for right man. Replies held in strictest confidence. Give full details, plus reasons why you desire change from present position.

Box 814, STEEL
Penton Bldg., Cleveland 13, O.

WANTED
MANUFACTURERS AGENCY OR DISTRIBUTORSHIP BY ESTABLISHED WISCONSIN CORPORATION

Milwaukee concern engaged solely with manufacturing and sales of Metal Briquettes, covering state of Wisconsin, desires to expand or diversify line. Presently calling on foundries and allied industries. Interested in lines dealing with manufacturing and industrial business, but will consider other fields. Warehouse space, railroad siding and trucking facilities available plus active selling force.

Reply Box 5
Granville, Wisconsin

WANTED
MAN WITH STEAM

As Plant Manager for small growing upset and drop forge plant in Southern Michigan. The design not required, some college and forge shop experience desirable. Main requirements: Ability to lead and stimulate men, plan and secure real production. Age preferably between 30 and 45. Have good men and good AFL Union. Executive bonus plan, salary negotiable. Replies confidential.

Write Box 821, STEEL
Penton Building Cleveland 13, Ohio

Advertising Index

Aeroquip Corporation 56
Ajax Electric Co., Inc. 83
Allen-Bradley Co. 131, 132
Alliance Machine Co., The 114
Alloy Steel Division, Republic Steel Corporation 157
American Brake Shoe Co., National Bearing Division 140
American Bridge Division, United States Steel Corporation 113
American Chemical Paint Co. 16
American Screw Co. 24
American Society for Metals 9
American Stamping Co., The 171
American Wheelabrator & Equipment Corporation 78
Apex Tool & Cutter Co., Inc. 166
Armco Steel Corporation 42
Atlantic Screw Works, Inc. 24

Baird Associates 136
Barium Steel Corporation 2
Bay State Abrasive Products Co. 139
Bethlehem Steel Co. 1
Blake & Johnson Co., The 24
Bridgeport Brass Co. 34, 35
Brown & Sharpe Mfg. Co. 103, 104
Browning, Victor R., & Co., Inc. 166
Brush Electronics Co. 159
Bryant Chucking Grinder Co. 108, 109
Bullard Co., The 60

Carpenter Steel Co., The 74
Central Screw Co. 24
Chambersburg Engineering Co. 163
Cincinnati Shaper Co., The 25
Clark Controller Co., The 117
Cleveland Steel Tool Co., The 168
Cleveland Worm & Gear Co., The Inside Back Cover
Colorado Fuel & Iron Corporation, The, Wickwire Spencer Steel Division 73
Columbia Steel & Shafting Co., Summerill Tubing Company Division 119
Conco Engineering Works Division of H. D. Conkey & Co. 118
Cone-Drive Gears Division, Michigan Tool Co. 154
Continental Screw Co. 24
Cooper Alloy Foundry Co., The 33
Copperweld Steel Co. 63
Crucible Steel Company of America 85
Cutler-Hammer, Inc. Back Cover

Delta Power Tool Division, Rockwell Manufacturing Co. 86
Detrex Corporation 96
Detroit Stamping Co. 168
Diamond Mfg. Co. 166
Dracco Corporation 145
Du Pont, E. I., de Nemours & Co., Inc. 21

Eagle Lock Co., The 24
Eastern Machine Screw Corporation, The 166, 174
Elco Tool & Screw Corporation 24
Electric Controller & Mfg. Co., The Inside Front Cover
Electric Service Co., The 175
Electro-Dynamic Division of General Dynamics Corporation 112
Elliott Co., Lagonda Division 133
Enthone, Inc. 137
Eureka Fire Brick Works 169

Fairfield Manufacturing Co. 160
Farmers Engineering & Manufacturing Co. 124
Ferro Corporation 168
Follansbee Steel Corporation 120

General Dynamics Corporation, Electro Dynamic Division 112
Geometric Stamping Co. 127
Gisholt Machine Co. 36
Gorham Tool Co. 12
Gould-National Batteries, Inc. 14, 15
Great Lakes Screw Corporation 24

Handy & Harman 105
Hanson-Van Winkle-Munning Co. 165
Harper, H. M., Co., The 24
Hendrick Manufacturing Co. 164
Homestead Valve Manufacturing Co. 102

Industrial Products Suppliers 170
Iron & Steel Products, Inc. 174, 175

Jeffrey Manufacturing Co., The 28
Jones & Laughlin Steel Corporation 129

Kardong Brothers, Inc. 166
Kemp, C. M., Mfg. Co. 32
Kidde, Walter, & Co., Inc. 10
Kirk & Blum Manufacturing Co., The 156

Lagonda Division, Elliott Co. 133
Lamson & Sessions Co., The 24
Landis Machine Co. 8
Leeds & Northrup Co. 22, 23
Lee Rubber & Tire Corporation, Republic Rubber Division 130
Levinson Steel Sales Co. 125
Lewthwaite, T. H., Machine Co., Inc. 170
Linde Air Products Co., A Division of Union Carbide & Carbon Corporation 26, 161
Lucas Machine Division, The New Britain Machine Co. 17, 18, 19, 20
Lumnite Division, Universal Atlas Cement Co. 155

McKay Machine Co., The 55
McKee, Arthur G., & Co. 99
McLouth Steel Corporation 37

Macwhyte Co. 3
Markowitz, Harry, Inc. 175
Michigan Tool Co., Cone-Drive Gears Division 154
Micromatic Hone Corporation 29
Mine Safety Appliances Co. 16

National Bearing Division, American Brake Shoe Co. 140
National Lock Co. 24
National Machinery Co. 95
National Metals Exposition 9
National Screw & Manufacturing Co., The 24
National Steel Corporation 31
New Britain-Gridley Machine Division, The New Britain Machine Co. 17, 18, 19, 20
New Britain Machine Co., The 17, 18, 19, 20
Northern Engineering Works 151

Ohio Knife Co., The 101
Ohio Locomotive Crane Co., The 168
O. K. Tool Co., Inc., The 169

Parker-Kalon Corporation 24
Pawtucket Manufacturing Co. 6
Perkins, B. F., & Son, Inc. 164
Peterson Steels, Inc. 162
Pheoll Manufacturing Co. 24
Poe Machine & Engineering Co., Inc. 166
Poole Foundry & Machine Co. 168
Precision Extrusions 5

Reading Crane & Hoist Corporation 138
Republic Rubber Division, Lee Rubber & Tire Corporation 130
Republic Steel Corporation, Alloy Steel Division 157
Rockford Screw Products Co. 24
Roebling's, John A., Sons Corporation 13
Ryerson, Joseph T., & Son, Inc. 46

Sargeant & Wilbur, Inc. 171
Scovill Manufacturing Co. 24
Screw Research Association 24
Shakeproof Div. of Illinois Tool Works 24
Simmons Machine Tool Corporation 30
Simonds Abrasive Co. 128
Southington Hdwe. Mfg. Co., The 24
Speedi-Dri Corporation 111
Sperry Products, Inc. 123
Sterling Bolt Co. 24
Stronghold Screw Products, Inc. 24
Summerill Tubing Company Division, Columbia Steel & Shafting Co. 119

Texas Co., The 38
Timken Roller Bearing Co., The, Steel & Tube Division 64
Tinnerman Products, Inc. 68
Toledo Stamping & Manufacturing Co. 170
Torrington Co., The 173
Torrington Manufacturing Co., The 126
Transue & Williams Steel Forging Corporation 71
Treadwell Engineering Co. 93

Union Carbide & Carbon Corporation, Linde Air Products Co. 26, 161
United States Steel Corp., Subsidiaries 113, 155
United States Steel Export Co. 113
Universal Atlas Cement Co., Lumnite Division 155
U. S. Electrical Motors, Inc. 80, 81

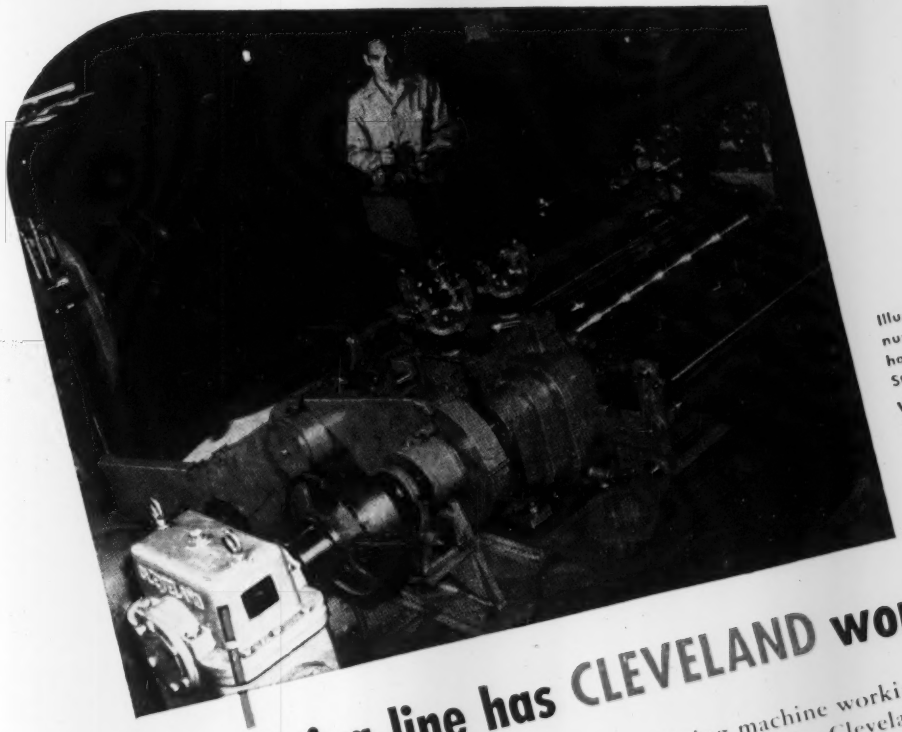
Veeder-Root, Inc. 4
Verson Allsteel Press Co. 7

Wales-Beech Corp. 24
Warner & Swasey 11
Weirton Steel Co. 31
Westinghouse Electric Corporation, Sturtevant Division 41
Wheeling Steel Corporation 170
Wickwire Spencer Steel Division of The Colorado Fuel & Iron Corporation 73
Williams-White & Co. 45

Youngstown Sheet & Tube Co., The 27

Table of Contents, Page 5

Classified Advertising, Pages 174, 175



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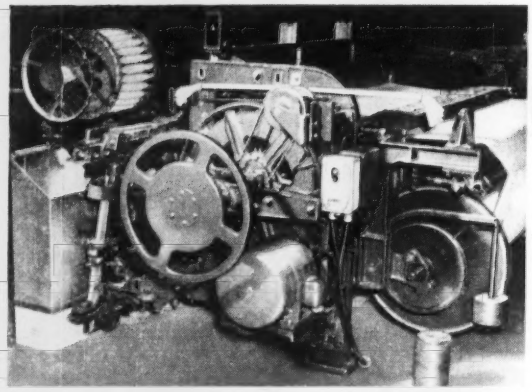

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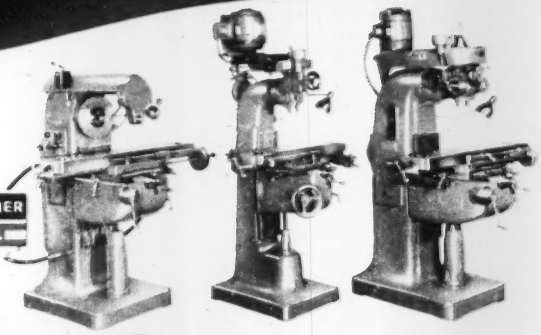
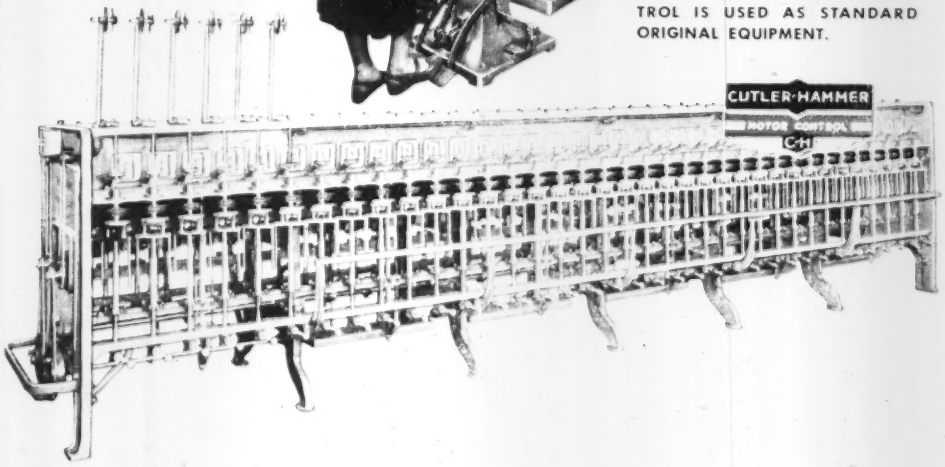


INDEX MILLING MACHINES MADE BY THE INDEX MACHINE AND TOOL COMPANY. CUTLER-HAMMER MOTOR CONTROL IS STANDARD ORIGINAL EQUIPMENT ON THE COMPLETE LINE.

BERRY NO. 5 ROUND HOLE CUTTER MANUFACTURED BY THE BERRY MACHINE COMPANY. CUTLER-HAMMER MOTOR CONTROL IS USED AS STANDARD ORIGINAL EQUIPMENT.



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